OMB No. 2040-0042 Approval Expires 12/31/2018

United States Environmental Protection Agency
Washington, DC 20460

Completion Form For Injection Wells

Administrative Information

1. Permittee: Florence Copper Inc.

Address *(Permanent Mailing Address) (Street, City, and ZIP Code)*: 1575 W Hunt Hwy, Florence, AZ 85132

2. Operator: Florence Copper Inc.

Address *(Street, City, State and ZIP Code)*: 1575 W Hunt Hwy, Florence, AZ 85132

3. Facility Name: Florence Copper Inc.

Telephone Number: (520) 374-3984

Address *(Street, City, State and ZIP Code)*: 1575 W Hunt Hwy, Florence, AZ 85132

4. Surface Location Description of Injection Well(s)

State: Arizona

County: Pinal

Surface Location Description

Nw 1/4 of SW 1/4 of NE 1/4 of SW 1/4 of Section 28 Township 4S Range 9E

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1010 ft. frm (N/S) N Line of quarter section and 900 ft. from (E/W) E Line of quarter section.

Well Activity

- [ ] Class I
- [ ] Class II
  - [ ] Brine Disposal
  - [ ] Enhanced Recovery
  - [ ] Hydrocarbon Storage
- [x] Class III
- [ ] Other

Well Status

- [x] Operating
- [ ] Modification/Conversion
- [ ] Proposed

Type of Permit

- [ ] Individual
- [x] Area : Number of Wells 33

Lease Number: NA

Well Number: O-02

Submit with this Completion Form the attachments listed in Attachments for Completion Form.

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Ian Ream, Senior Hydrogeologist		9-12-2018

Attachments to be submitted with the Completion report:

I. Geologic Information

1. Lithology and Stratigraphy

A. Provide a geologic description of the rock units penetrated by name, age, depth, thickness, and lithology of each rock unit penetrated.

B. Provide a description of the injection unit.

(1) Name
(2) Depth (drilled)
(3) Thickness
(4) Formation fluid pressure
(5) Age of unit
(6) Porosity (avg.)
(7) Permeability
(8) Bottom hole temperature
(9) Lithology
(10) Bottom hold pressure
(11) Fracture pressure

C. Provide chemical characteristics of formation fluid (attach chemical analysis).

D. Provide a description of freshwater aquifers.

(1) Depth to base of fresh water (less than 10,000 mg/l TDS).
(2) Provide a geologic description of aquifer units with name, age, depth, thickness, lithology, and average total dissolved solids.

II. Well Design and Construction

1. Provide data on surface, intermediate, and long string casing and tubing. Data must include material, size, weight, grade, and depth set.

2. Provide data on the well cement, such as type/class, additives, amount, and method of emplacement.

3. Provide packer data on the packer (if used) such as type, name and model, setting depth, and type of annular fluid used.

4. Provide data on centralizers to include number, type and depth.

5. Provide data on bottom hole completions.

6. Provide data on well stimulation used.

III. Description of Surface Equipment

1. Provide data and a sketch of holding tanks, flow lines, filters, and injection pump.

IV. Monitoring Systems

1. Provide data on recording and nonrecording injection pressure gauges, casing-tubing annulus pressure gauges, injection rate meters, temperature meters, and other meters or gauges.

2. Provide data on constructed monitor wells such as location, depth, casing diameter, method of cementing, etc.

V. Logging and Testing Results

Provide a descriptive report interpreting the results of geophysical logs and other tests. Include a description and data on deviation checks run during drilling.

VI. Provide an as-built diagrammatic sketch of the injection well(s) showing casing, cement, tubing, packer, etc., with proper setting depths. The sketch should include well head and gauges.

VII. Provide data demonstrating mechanical integrity pursuant to 40 CFR 146.08.

VIII. Report on the compatibility of injected wastes with fluids and minerals in both the injection zone and the confining zone.

IX. Report the status of corrective action on defective wells in the area of review.

X. Include the anticipated maximum pressure and flow rate at which injection will operate.

HALEY & ALDRICH, INC.
One Arizona Center
400 E. Van Buren St., Suite 545
Phoenix, AZ 85004
602.760.2450

TECHNICAL MEMORANDUM

14 September 2018
File No. 129687-010

TO: Florence Copper Inc.
Ian Ream, Senior Hydrogeologist

FROM: Haley & Aldrich, Inc.
Lauren Candreva, R.G.

Subject: Drilling, Installation, and Integrity Testing Summary
PTF Observation Well O-02
Florence Copper Inc., Florence, Arizona

This document describes drilling, installation, and testing of the Production Test Facility (PTF) observation well O-02 for Florence Copper, Inc. (Florence Copper) in Florence, Arizona, including a description of the equipment used to perform the work, details of the completed work, and the results of well testing activities. Separate well completion reports have been created for each PTF well.

The Arizona Department of Water Resources Registry ID for well O-02 is 55-227231; the Well Registry Report is included in Appendix A. Well O-02 is located in the southwest quarter of the northeast quarter of the southwest quarter of Section 28 of Township 4 north, Range 9 east of the Gila and Salt River Baseline and Meridian (D(4-9)28CAC). Well O-02 is located within the Underground Injection Control (UIC) Permitted Area of Review (AOR) for UIC Permit R9UIC-AZ3-FY11-1 and was completed as a Class III observation well for the PTF (Figure 1).

Florence Copper contracted Hydro Resources to drill, install, and test observation well O-02 in accordance with *Bid Specification: Drilling, Installation, and Testing of Class III Observation Wells, Production Test Facility, Florence, Arizona* (Haley & Aldrich, Inc. [Haley & Aldrich], 2017). A Midway 3500 drilling rig was used for all drilling and construction activities. Haley & Aldrich provided oversight of drilling activities, geophysical logging, well installation, and testing. All reported depths are in feet below ground surface (bgs) unless otherwise noted.

I. Geologic Information

1. Lithology and Stratigraphy

A. Geology of Penetrated Units

The geology penetrated during the drilling of the Class III well O-02 is summarized in the table below and a lithologic log is included in Appendix B.

Lithologic Unit Name	Depth to Bottom of Unit (feet)	Thickness of Unit (feet)	Lithology and Age of Unit
Upper Basin Fill Unit (UBFU)	281	281	Alluvium; Quaternary to Tertiary
Middle Fine-Grained Unit (MFGU)	300	19	Alluvium; Tertiary
Lower Basin Fill Unit (LBFU)	430	130	Alluvium; Tertiary to Cretaceous
Bedrock Oxide Unit (Oxide)	Not encountered	>794	Igneous porphyry – Precambrian

B. Description of Injection Unit

Name	Bedrock Oxide Unit
Depth Drilled	1,224 feet
Thickness	>794 feet
Formation Fluid Pressure	Atmospheric plus head of freshwater – no additional formation pressure
Age of Unit	Precambrian with intrusions of Precambrian to Tertiary rocks
Porosity	Approximately 6 to 8.5%
Permeability	Hydraulic Conductivity = 0.56 feet per day
Bottom Hole Temperature	30.6 degrees Celsius
Lithology	Igneous porphyry – quartz monzonite, granodiorite with diabase and andesite dykes (detailed log included in Appendix B)
Bottom Hole Pressure	Approximately 430 pounds per square inch (PSI) (pressure exerted by the column of freshwater with no additional contribution from formation pressure)
Fracture Pressure	0.65 PSI per foot
[1] Porosity values for the bedrock oxide unit are approximate values from calculated neutron porosity values from injection well borehole surveys.	

C. Chemical Characteristics of Formation Fluid

The chemical characteristics of the formation fluid in the injection zone are summarized below and the results of the sampling of the center PTF wellfield well R-09. The table below summarizes the primary chemical characteristics detected in a formation fluid sample collected on 23 April 2018, the complete analytical report is included in Appendix C.

Analyte	Result (mg/L)
Metals	
Aluminum	<0.08
Antimony	<0.005
Arsenic	0.0016
Barium	0.071
Beryllium	<0.0005
Cadmium	<0.00025
Calcium	140
Chromium	0.0051
Cobalt	<0.00025
Copper	0.011
Iron	<0.30
Lead	<0.0005
Magnesium	27
Manganese	0.002
Mercury	<0.001
Nickel	0.0033
Potassium	6.8
Selenium	<0.0025
Sodium	170
Thallium	<0.0005
Zinc	<0.04
Anions	
Bicarbonate	150
Chloride	310
Fluoride	<0.5
Nitrate	8.8
Sulfate	190
Field Parameters	
Total Dissolved Solids	1,000
pH	7.8
Radiochemicals	
Uranium	0.016
Notes: *mg/L = milligrams per liter*	

Results of the sampling of well O-02 are included in the *PTF Mine Block Ambient Groundwater Concentrations and Initial Discharge Characterization of the Underground Workings* (Brown and Caldwell, 2018).

D. Description of Freshwater Aquifers

1) The depth to the base of the freshwater aquifer is defined by the interface where deeper formation fluid exhibits a total dissolved solids (TDS) value of 10,000 milligrams per liter

(mg/L). The depth of the 10,000 mg/L interface is deeper than all of the wells drilled at the site and consequently has not been defined.

2) The geologic description of the aquifer units is included below:

Aquifer Unit Name	Age	Depth (feet)	Thickness (feet)	Lithology	Average Total Dissolved Solids[1] (mg/L)
UBFU	Quaternary/Tertiary	0 to 281	281	Alluvium	914
LBFU	Tertiary	300 to 430	130	Alluvium	754
[1] Average TDS values calculated from UBFU and LBFU monitoring well ambient monitoring results near the PTF.					

II. Well Design and Construction

1. Well O-02 Casing Installed:

Casing	Material	Diameter (inches)	Weight (pounds per foot)	Depths (feet)	Borehole Diameter (inches)	Drilling Method
Surface	Mild Steel	14 O.D. 13⅜ I.D.	47.36	0 to 40	24	Solid-stem auger
Well Casing	Fiberglass Reinforced Plastic	5.47 O.D. 4.74 I.D.	5.40	-0.5 to 500	12¼	Reverse Flooded Rotary
Screen	PVC SCH80 with 0.020-inch wide slots	5.56 O.D. 4.81 I.D.	4.08	500 to 1,201	12¼	Reverse Flooded Rotary
Notes: *I.D. = inside diameter* *O.D. = outside diameter* *PVC = polyvinyl chloride* *SCH = Schedule*						

2. Well Cement

Cement Interval	Cement Type	Additives	Amount Installed (cubic yards)	Method of Emplacement
Surface Casing	Type V Neat 21 sack slurry	None	7	Submerged tremie
Well Casing	Type V Neat 21 sack slurry	None	24.7	Submerged Tremie

Field forms documenting pipe tallies, annular materials, and cement tickets are included in Appendix D.

3. Annular Packers

   No annular packers were used during construction of well O-02.

4. Centralizers

Casing	Centralizer Type	Number and Spacing
Well – FRP and PVC	Stainless steel – Heavy Duty	28 installed – every 40 feet
Notes: *FRP = fiberglass reinforced plastic* *PVC = polyvinyl chloride*		

5. Bottom Hole Completion

   There is no bottom hole completion as this is not an oil/gas well. The well was completed at the bottom with a stainless-steel endcap of the same diameter as the well screen.

6. Well Stimulation

   No well stimulation was used during the drilling and construction of well O-02.

III. Description of Surface Equipment

1. Surface Equipment

   Well O-02 is an observation well and has been equipped with a pressure transducer for monitoring water level and a low-flow pump for collecting fluid samples for analysis of specific conductance. A diagram of the wellhead is included in the well as-built in Figure 2.

IV. Monitoring Systems

1. Well monitoring equipment

Equipment Type	Location	Type	Purpose
Pressure Transducer	Well Casing	Recording	Monitor water column/pressure
Electrical Conductivity Sensors	Well Annulus	Non-recording	Monitor formation conductivity
Annular Conductivity Sensors	Well Annulus	Non-recording	Monitor formation conductivity

2. Monitoring Wells

There are a total of 16 monitoring wells associated with the PTF: 7 point-of-compliance (POC) wells, 7 United States Environmental Protection Agency (USEPA) supplemental monitoring wells, and 2 operational monitoring wells. The POC wells are located outside the AOR and are not constructed as Class III wells. The supplemental monitoring and operational monitoring wells are located within the AOR and are constructed as Class III wells as required by the UIC Permit. The wells are summarized in the tables below by type.

POC Wells						
Well ID	**Location X/Y (State Plane NAD 83)**	**Depth (feet)**	**Well Nom. Diameter (inches)**	**Cementing Method**	**Screened Interval (feet)**	**Screened Lithologic Unit**
M14-GL	846750.23 746461.52	859	5 9/16 OD	Submerged tremie	778 to 838	LBFU
M15-GU	846697.17 746464.82	615	5 9/16 OD	Submerged tremie	554 to 594	LBFU
M22-O	846751.26 746514.47	1,140	5 9/16 OD to 528 feet; 4 ½ OD to 1,140 feet	Submerged tremie	932 to 1,130	Oxide
M23-UBF	846688.13 746512.48	250	6 5/8 OD	Submerged tremie	210 to 250	UBFU
M52-UBF	851092.00 774178.00	274	5 9/16	Submerged tremie	198 to 273	UBFU
M54-LBF	847331.96 746682.61	630	5 9/16	Submerged tremie	310 to 629	LBFU
M54-O	847342.99 746702.36	1,199	5 9/16	Submerged tremie	668 to 1,198	Oxide

Supplemental Monitoring Wells						
Well ID	**Location X/Y (State Plane NAD 83)**	**Depth (feet)**	**Well Nom. Diameter (inches)**	**Cementing Method**	**Screened Interval (feet)**	**Screened Lithologic Unit**
M55-UBF	847541.46 746280.63	261	5	Submerged tremie	240 to 260	UBFU
M56-LBF	847518.70 746303.41	340	5	Submerged tremie	320 to 340	LBFU
M57-O	847378.37 746248.93	1,200	5	Submerged tremie	523 to 1,199	Oxide

Supplemental Monitoring Wells						
Well ID	**Location X/Y (State Plane NAD 83)**	**Depth (feet)**	**Well Nom. Diameter (inches)**	**Cementing Method**	**Screened Interval (feet)**	**Screened Lithologic Unit**
M58-O	847672.23 746595.97	1,200	5	Submerged tremie	594 to 1,199	Oxide
M59-O	847934.95 746218.89	1,201	5	Submerged tremie	534 to 1,199	Oxide
M60-O	847599.37 745903.70	1,201	5	Submerged tremie	444 to 1,200	Oxide
M61-LBF	848184.46 746148.88	629	5	Submerged tremie	429 to 629	LBFU

Operational Monitoring Wells						
Well ID	**Location X/Y (State Plane NAD 83)**	**Depth (feet)**	**Well Nom. Diameter (inches)**	**Cementing Method**	**Screened Interval (feet)**	**Screened Lithologic Unit**
MW-01-LBF	847487.97 746360.54	444	5	Submerged tremie	330 to 440	LBFU
MW-01-O	847499.04 746369.31	1,200	5	Submerged tremie	500 to 1,200	Oxide

V. Logging and Testing Results

Borehole geophysical logging was conducted on well O-02 in two phases: 1) open-hole surveys in the 12.25-inch borehole prior to installation of the well casing and screen, and 2) cased-hole surveys in the completed well.

The open-hole geophysical surveys completed at well O-02 included:

- Spontaneous potential;
- Natural gamma;
- Electrical resistivity (short and long normal);
- Caliper with calculated volume;
- Temperature;
- Sonic; and
- Deviation.

The cased-hole geophysical surveys completed included:

- Sonic (for cement bond with fiberglass reinforced plastic [FRP]);
- 4 Pi Density (for cement bond with FRP);
- Dual Density (for cement bond with FRP);
- Natural Gamma;
- Fluid Conductivity;
- Temperature;
- Gyroscopic Deviation Survey; and
- Video Survey.

Open-hole geophysical surveys were used to support identification of the lithologic contacts, to evaluate the condition of the borehole, and to evaluate the deviation of the borehole.

The primary logs used to evaluate lithologic contacts are natural gamma ray, short (16-inch) and long (64-inch) normal electrical resistance, and single-point resistance.

The lithologic contacts for the Middle Fine-Grained Unit (MFGU) were selected based on the short and long resistance and the single-point resistance. All the resistivity logs decreased and stayed consistently low through the MFGU. This contact is generally a relatively sharp decrease in resistance at the top of the unit and a gradual increase in resistance below the bottom of the unit.

The contact between the Lower Basin Fill Unit (LBFU) and the bedrock was identified primarily with natural gamma and correlated with the resistance logs. There is a consistent increase in gamma at the contact between the LBFU and the bedrock that had been identified and documented at the site during exploration in the 1990s. For well O-02, the gamma is consistently at approximately 60 American Petroleum Institute (API) units throughout the Upper Basin Fill Unit (UBFU) and MFGU, a slight increase to approximately 70 to 75 API units in the LBFU to approximately 405 where there is a decrease in gamma and resistance to the bedrock contact at approximately 430 feet. At 430 feet, the gamma increases to over 120 API units. After the increase at 430 feet, the natural gamma begins to vary significantly more than it did in the alluvial units. This change in the response of the natural gamma indicates the contact with the bedrock unit. Also, at this approximate depth (425 to 430 feet) there is also a spike in the single-point resistance and the short normal resistance indicating the formation has become more resistant, this is likely primarily due to the bedrock containing less water than the alluvial formation above.

Cased-hole geophysical surveys were conducted to evaluate the cement seal, the casing-cement bond, to document baseline fluid temperature and conductivity and to evaluate the plumbness of the well. The cement-bond is discussed in Section VII.

Copies of all the open-hole geophysical logs and cased-hole temperature, fluid conductivity, and natural gamma are included in Appendix E; a figure summarizing the open-hole logs used to evaluate geology is included as Figure 3. The cased-hole logs used to evaluate cement bond are included in Appendix F**.**

VI. Well As-Built Diagram

An as-built diagram for well O-02 is included as Figure 2.

VII. Demonstration of Mechanical Integrity

A demonstration of Part I mechanical integrity of the well was completed using a standard annular pressure test (SAPT) in accordance with Part II.E.3.a.i.A of the UIC Permit. Mechanical integrity will be demonstrated every 2 years during operations and will be confirmed by daily injection pressure monitoring that will be conducted per the UIC Permit once the well is operational. Well O-02 SAPT is summarized below.

The mechanical integrity of the blank well casing was tested by performing a SAPT on 25 March 2018. The SAPT was conducted by installing an inflatable straddle packer assembly in the well. The bottom packer was installed near the bottom of the FRP-cased portion of the well and the top packer was near the surface, the packers were inflated to form a seal against the casing. The bottom 5 feet of the packer drop pipe was perforated to allow for communication between the tubing and the annulus of the packer assembly. The drop pipe extended through the wellhead and a high pressure/low volume pump was attached to the drop pipe to pressurize the test interval. A valve on the drop pipe at the surface was used to isolate the test interval once the planned test pressure was achieved.

An In-Situ LevelTROLL® pressure transducer with a data logger was installed at the well head and was connected to the packer assembly annulus interval via a National Pipe Thread adapter. The LevelTROLL was used to monitor and record pressure inside the well during the SAPT. To conduct the SAPT, water was pumped from a nearby well immediately prior to testing. Before the water was pumped into the test well, the water temperature was measured to ensure that it was similar to the ambient groundwater temperature of the test well to reduce the potential of differential temperature effects on the well casing. The SAPT for the Class III well was conducted by applying hydraulic pressure to the well casing and shutting in pressure between the packer and wellhead assembly, monitoring the shut-in pressure for a 30-minute period, then measuring the volume of water returned from the well casing after the pressure was released.

On 25 March 2018, the packer was installed to approximately 482 feet and the SAPT was conducted successfully two times. The USEPA SAPT form, a table of the data, and a chart of the data is provided in Appendix G.

Part II mechanical integrity is demonstrated by the cementing records included in this report in accordance with Part II.E.3.ii.C of the UIC Permit and will be demonstrated during operations by annular conductivity monitoring on the observation and multi-level sampling wells in accordance with Part II.E.3.a.ii.A of the UIC Permit.

Cemented Interval	Cement Type	Calculated Grout Volume (cubic yards)	Installed Grout Volume (cubic yards)
Surface Casing	Type V 21 sack neat cement slurry	3.1	7
Well Casing	Type V 21 sack neat cement slurry	24.1	24.7

On 28 March 2018, a suite of geophysical logs was run over the entire length of the completed well to verify the grout seal. A summary of the logs completed to demonstrate cement bond are included in Appendix F.

There is not a bond log tool designed to evaluate cement bond with FRP casing, so the cement interval with FRP casing of well O-02 was evaluated using density logs. The logs collected included sonic, focused density, and 4pi density. Based on the measured density of the FRP cased interval of well O-02, no significant cement deficiencies were noted in the sonic data collected from approximately 226 feet (static water level) to 480 feet, and no significant deficiencies were noted in the 4pi density data collected from 37 to 480 feet. There were some very localized, low density intervals identified in the 4pi density logs but they were insignificant, only extending 2 to 3 feet ,or are not apparent on the focused density and so are not extensive. A summary of the FRP cased data is included in the well completion summary in Appendix F.

VIII. Compatibility of Injected Waste

The Florence Copper Project is a Class III mineral extraction project and does not include the injection of any waste products of any kind. The injected fluid (lixiviant) is a carefully constituted in-situ copper recovery (ISCR) solution that will be recovered and recycled following injection.

The compatibility of the lixiviant was evaluated as part of the geochemical modeling completed by Florence Copper and summarized in the *Geochemical Evaluation to Forecast Composition of Process Solutions for In-Situ Copper Recovery Pilot Test Facility at Florence Copper, Florence Arizona* (Daniel B. Stephens Inc., 2014) which was included in Attachment H of the UIC Permit Application.

IX. Status of Corrective Action on Defective Wells in the Area of Review

There are not currently any defective wells in the AOR.

X. Maximum Pressures and Flow Rates for O-02

Maximum Operating Pressure	Maximum Flow
Atmospheric	Not applicable – observation well

This well is an observation well used to monitor hydraulic control of the PTF. No fluids will be injected and only fluid to take specific conductivity will be extracted using the installed low-flow pump.

XI. Well Development

Well O-02 was developed by the airlift method, followed by pumping, and was completed by Hydro Resources using a workover rig. To purge drilling fluids and solids, the well was air-lift developed from 15 through 20 March 2018 at various depths ranging from approximately 425 feet to 1,200 feet. During development, the airlift pump was turned on and off to surge the well. On 19 March 2018, approximately 3 gallons of AquaClear PFD® polymer dispersant was swabbed into the screened interval of the well. The discharge was relatively clear and sand-free at the end of the airlift development period.

On 22 March 2018, a submersible pump was temporarily installed to approximately 1,160 feet to pump develop the well. Prior to pumping, the static water level was measured at approximately 232.5 feet. Pump development was conducted at approximately 60 to 70 gallons per minute (gpm) over a period of 3 days (22 to 24 March 2018), during which time the submersible pump was raised to 900 feet and 600 feet (both on 25 March), and periodically turned off to surge the well. The pumping water level at the end of each pumping period was approximately 280 to 285 feet. In general, the discharge was visually clear and sand-free throughout the pump development period, with turbidity values of approximately 5 Nephelometric Turbidity Unit at the end of the development period. Well development forms are included in Appendix H.

XII. Well Completion

A well video survey was conducted on 30 March 2018. The video log report is included as Appendix I. The video log depths are presented in feet below the top of the casing and so vary slightly from what is recorded, but with the correction for stick up are the same.

The video log indicates the top of fill in the well is at 1,174 feet. The fill in the well was cleaned out by airlifting on 6 May 2018 and the bottom was tagged at 1,195 feet.

A gyroscopic survey was also conducted on the completed well on 27 March 2018; the results are included in Appendix I.

The surveyed location for well O-02 is:

Northing (feet)	Easting (feet)	Measuring Point Elevation (feet amsl)
746202.32	847836.29	1479.27
***Notes**:* *Northing and easting locations provided in State Plane North American Datum 1983, vertical location provided in North American Vertical Datum 1988.* *amsl – feet above mean sea level*		

XIII. Downhole Equipment

The equipment installed in well O-02 includes:

- QED® low-flow sampling pump hung on drop tubing – pump at 600 feet; and
- Pressure transducer.

The type and depth of equipment installed in each well is not constrained by the UIC Permit or Aquifer Protection Permit (APP). This information is provided in accordance with Section 2.7.4.3 of the APP. Operational consideration may require that the type and depth of equipment may need to be changed in response to conditions observed during operations.

XIV. References

Brown and Caldwell, Inc., 2018. *PTF Mine Block Ambient Groundwater Concentrations and Initial Discharge Characterization of the Underground Workings*. August.

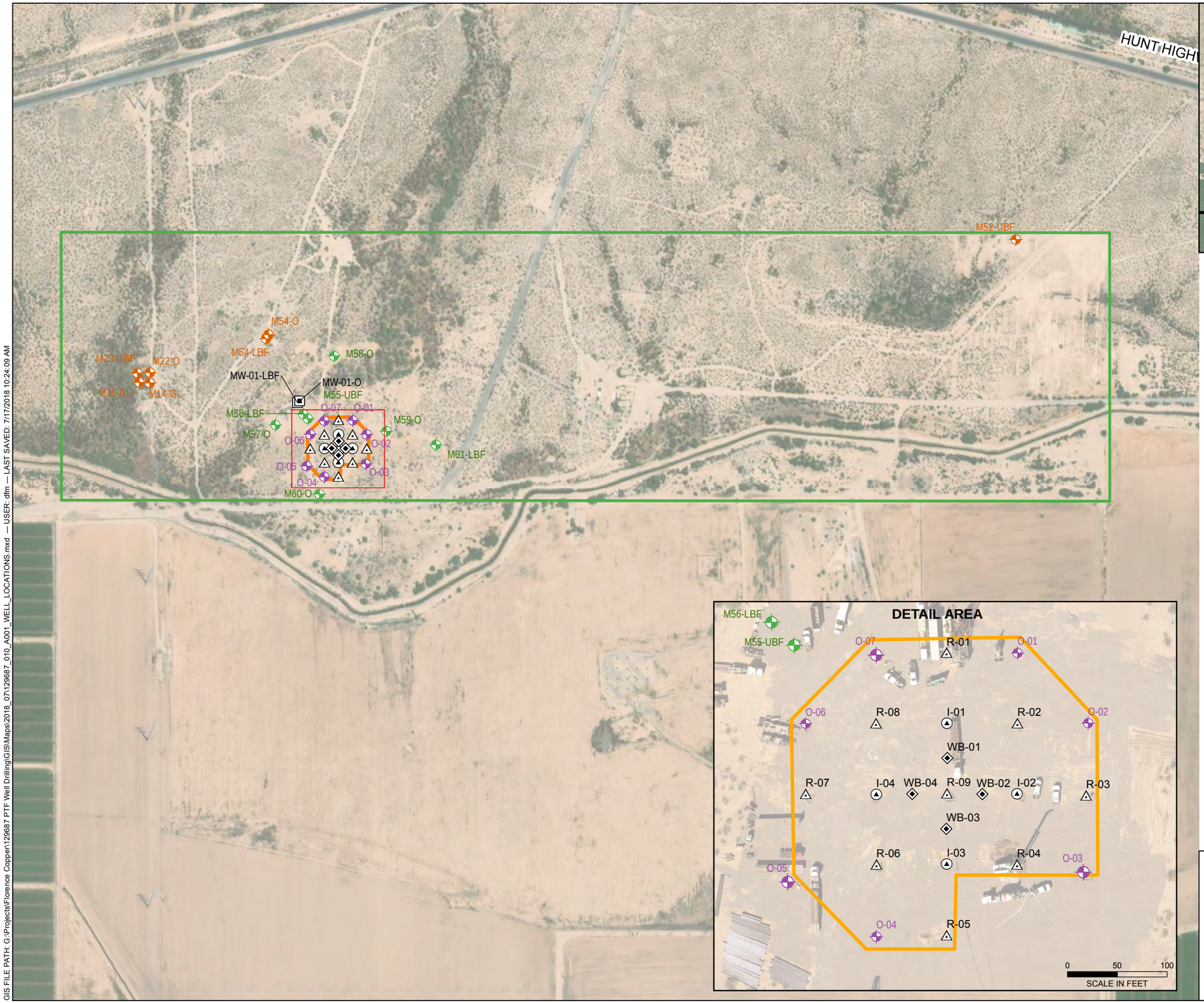
Daniel B. Stephens, Inc., 2014. *Geochemical Evaluation to Forecast Composition of Process Solutions for In-Situ Copper Recovery Pilot Test Facility at Florence Copper, Florence Arizona.* May.

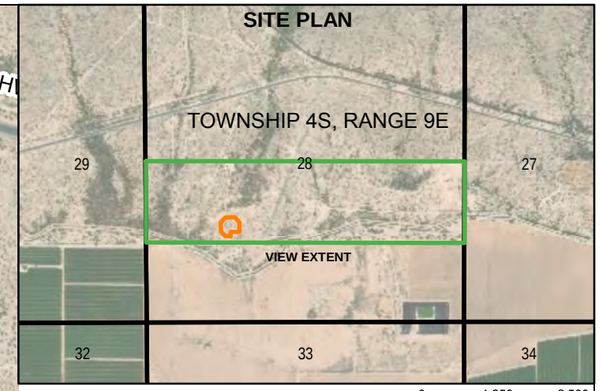
Haley & Aldrich, Inc., 2017. *Bid Specification: Drilling, Installation, and Testing of Class III Observation Wells, Production Test Facility, Florence, Arizona*. Revised September 2017.

Enclosures:

- Figure 1 – Well Locations
- Figure 2 – O-02 Well As-Built Diagram
- Figure 3 – Geophysical Data and Lithologic Log
- Appendix A – Arizona Department of Water Resources Well Registry Report
- Appendix B – Lithologic Log
- Appendix C – Chemical Characteristics of Formation Water
- Appendix D – Well Completion Documentation
- Appendix E – Geophysical Logs
- Appendix F – Cement Bond Log Summary
- Appendix G –SAPT Documentation
- Appendix H – Well Development Field Forms
- Appendix I – Well Video Log and Gyroscopic Survey Reports

FIGURES





LEGEND

- OBSERVATION WELL
- SUPPLEMENTAL MONITORING WELL
- POINT-OF-COMPLIANCE WELL

PTF WELL

- INJECTION
- RECOVERY
- WESTBAY WELL
- OPERATIONAL MONITORING
- PTF WELL FIELD
- STATE LAND LEASE

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

0 500 1,000
SCALE IN FEET

HALEY ALDRICH

FLORENCE COPPER PROJECT
FLORENCE, ARIZONA

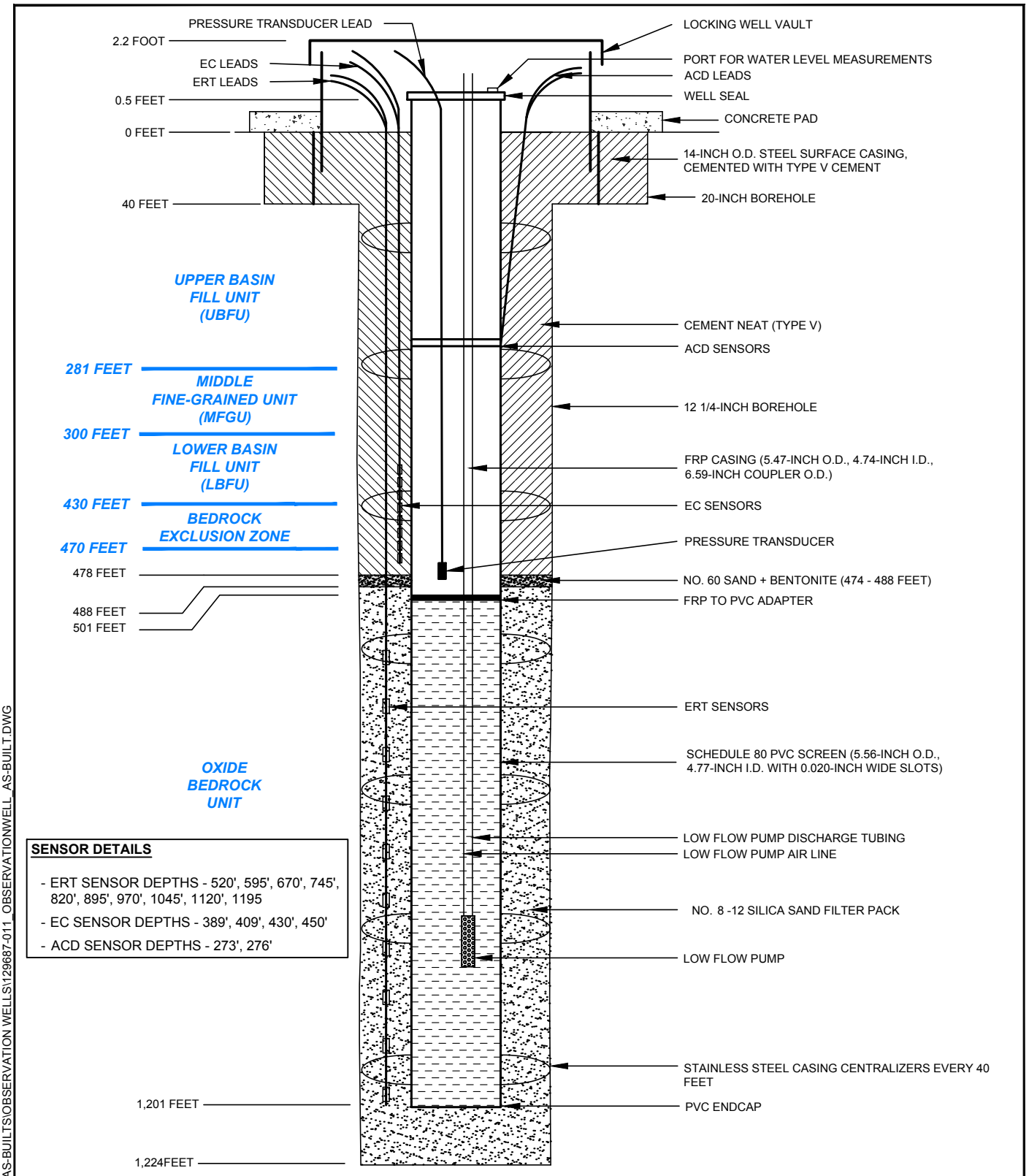
WELL LOCATIONS

FLORENCE COPPER INC.

AUGUST 2018

FIGURE 1

GIS FILE PATH: G:\Projects\Florence Copper\129687 PTF Well Drilling\GIS\Maps\2018_07\129687_010_A001_WELL_LOCATIONS.mxd — USER: dfm — LAST SAVED: 7/17/2018 10:24:09 AM



SENSOR DETAILS

- ERT SENSOR DEPTHS - 520', 595', 670', 745', 820', 895', 970', 1045', 1120', 1195
- EC SENSOR DEPTHS - 389', 409', 430', 450'
- ACD SENSOR DEPTHS - 273', 276'

NOTES

1. WELL REGISTRATION NO.: 55-227231
2. CADASTRAL LOCATION: D (4-9) 28 CAC
3. MEASURING POINT ELEVATION: 1479.36' AMSL
4. I.D. = INSIDE DIAMETER
5. O.D. = OUTSIDE DIAMETER
6. PVC = POLYVINYL CHLORIDE
7. FRP = FIBERGLASS REINFORCED PLASTIC
8. ACD = ANNULAR CONDUCTIVITY DEVICE
9. EC = ELECTRICAL CONDUCTIVITY
10. ERT = ELECTRICAL RESISTIVITY TOMOGRAHY

HALEY ALDRICH

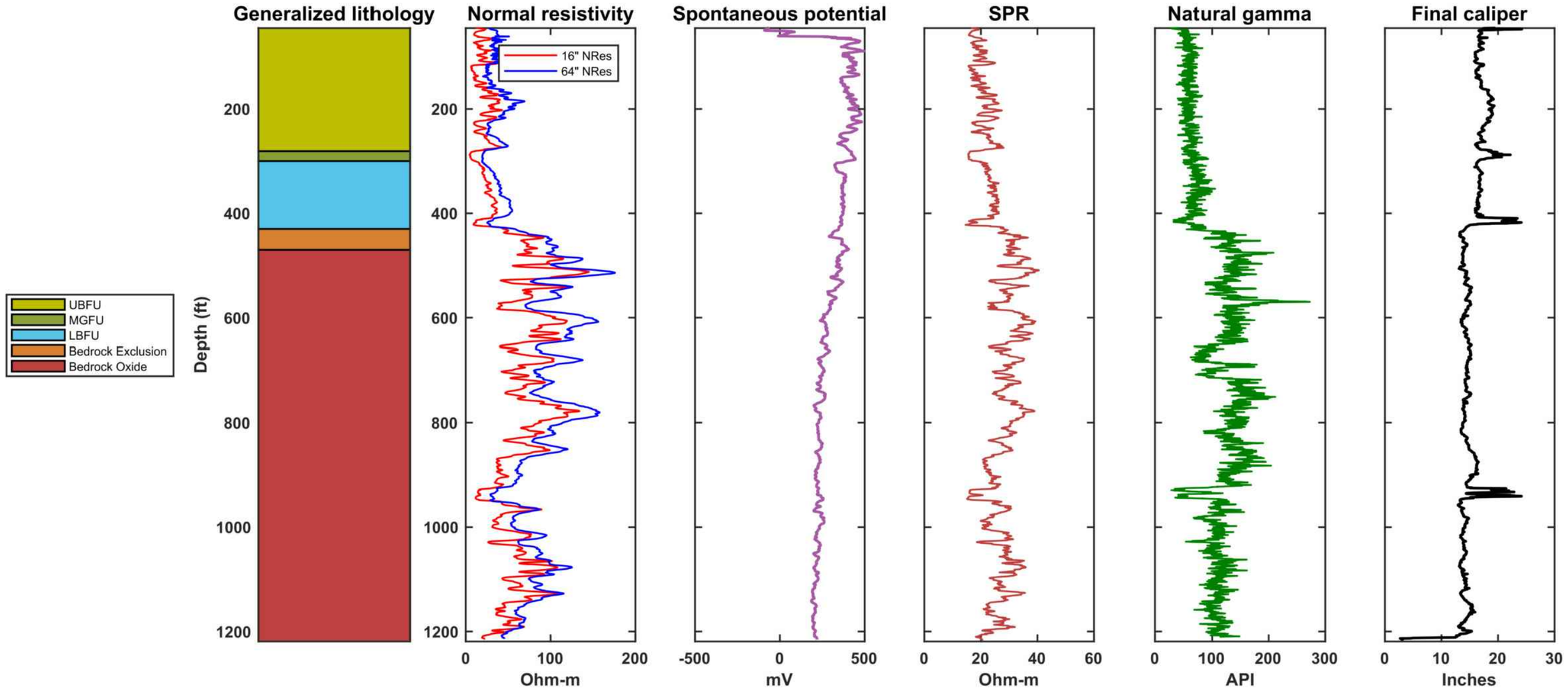
PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

OBSERVATION WELL O-02 AS-BUILT DIAGRAM

FLORENCE COPPER

SCALE: NOT TO SCALE
SEPTEMBER 2018

FIGURE 2



MCELENEY, TERRI Printed: 8/7/2018 9:43 AM Layout: O02
G:\129687\GLOBAL\CAD\129687-010 GEOPHYICAL DATA2 2016-0802.DWG

HALEY ALDRICH

PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

O-02 OBSERVATION WELL GEOPHYSICAL DATA AND LITHOLOGIC LOG

FLORENCE COPPER

SCALE: AS SHOWN
SEPTEMBER 2018

FIGURE 3

APPENDIX A

Arizona Department of Water Resources Well Registry Report

Run Date: 02/12/2018

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location D 4.0 9.0 28 C A C

Well Reg.No 55 - 227231

AMA PINAL AMA

Registered Name AZ STATE LAND DEPT.
1616 W. ADAMS ST.
ATTN: LISA ATKINS
PHOENIX AZ 85007

File Type NEW WELLS (INTENTS OR APPLICATIONS)
Application/Issue Date 04/19/2017

Owner OWNER
Driller No. 226
Driller Name CASCADE DRILLING, LP
Driller Phone 623-935-0124
County PINAL

Intended Capacity GPM 0.00

Well Type ENV - MONITOR
SubBasin ELOY
Watershed UPPER GILA RIVER
Registered Water Uses MONITORING
Registered Well Uses MONITOR
Discharge Method NO DISCHARGE METHOD LISTED
Power NO POWER CODE LISTED

Well Depth	0.00	**Case Diam**	0.00	**Tested Cap**	0.00
Pump Cap.	0.00	**Case Depth**	0.00	**CRT**	
Draw Down	0.00	**Water Level**	0.00	**Log**	
		Acres Irrig	0.00	**Finish**	NO CASING CODE LISTED

Contamination Site: NO - NOT IN ANY REMEDIAL ACTION SITE

Tribe: Not in a tribal zone

Comments JW
Well O-02
AZ State Land Dept. Mineral Lease #11-026500

Current Action

2/12/2018 869 CHANGE OF DRILLER PACKET ISSUED
Action Comment: jw

Action History

2/9/2018 865 CHANGE OF DRILLER RECEIVED
Action Comment: jw

4/25/2017 550 DRILLING AUTHORITY ISSUED
Action Comment: TNV

4/25/2017 555 DRILLER & OWNER PACKETS MAILED
Action Comment: TNV

4/19/2017 155 NOI RECEIVED FOR A NEW NON-PRODUCTION WELL
Action Comment: TNV

ARIZONA DEPARTMENT OF WATER RESOURCES
1110 W. Washington St. Suite 310
Phoenix, Arizona 85007

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILLING OPERATIONS

WELL REGISTRATION NO: **55-227231** WELL OWNER ID: O-02

AUTHORIZED DRILLER: **CASCADE DRILLING, LP** LICENSE NO: **226**

NOTICE OF INTENTION TO DRILL ENV - MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: **AZ STATE LAND DEPT. 1616 W. ADAMS ST. ATTN: LISA ATKINS PHOENIX, AZ, 85007**

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

SW 1/4 of the **NE** 1/4 of the **SW** 1/4 Section **28** Township **4.0** **SOUTH** Range **9.0** **EAST**

NO. OF WELLS IN THIS PROJECT: **1**

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE DAY OF **April 19, 2018**

Stella Murillo

GROUNDWATER PERMITTING AND WELLS

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING.

ARIZONA DEPARTMENT *of* WATER RESOURCES
1110 W. Washington St. Suite 310
Phoenix, AZ 85007
602-771-8500
azwater.gov

February 12, 2018

AZ STATE LAND DEPT.
1616 W. ADAMS ST.
ATTN: LISA ATKINS
PHOENIX, AZ 85007

DOUGLAS A. DUCEY
Governor

THOMAS BUSCHATZKE
Director

Registration No. 55- 227231
File Number: D(4-9) 28 CAC

Dear Well Applicant:

Enclosed is a copy of the Notice of Intention to Drill (NOI) a well which you or your driller recently filed with the Department of Water Resources. This letter is to inform you that the Department has approved the NOI and has mailed, or made available for download, a drilling authorization card to your designated well drilling contractor. The driller may not begin drilling until he/she has received the authorization, and must keep it in their possession at the well site during drilling. Although the issuance of this drill card authorizes you to drill the proposed well under state law, the drilling of the well may be subject to restrictions or regulations imposed by other entities.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, a new NOI must be filed and authorization from this Department received before proceeding with drilling. If the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed by your driller [as required by A.A.C. R12-15-816(F)].

If you change drillers, you must notify the Department of the new driller's identity on a Request to Change Well Information (form 55-71A). Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he/she receives a new drilling authorization card from the Department.

If you find it necessary to change the location of the proposed well(s), you may not proceed with drilling until you file an amended NOI with the Department. An amended drilling authorization card will then be issued to the well drilling contractor, which must be in their possession before drilling begins.

Arizona statute [A.R.S. § 45-600] requires registered well owners to file a Pump Installation Completion Report (form 55-56) with the Department within 30 days after the installation of pumping equipment, if authorized. A blank report is enclosed for your convenience. State statute also requires the driller to file a complete and accurate Well Drillers Report and Well Log (form 55-55) within 30 days after completion of drilling. A blank report form was provided to your driller with the drilling authorization card. You should insist and ensure that all of the required reports are accurately completed and timely filed with the Department.

Please be advised that Arizona statute [A.R.S. § 45-593(C)] requires a registered well owner to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (form 55-71A) that may be downloaded from the ADWR Internet website at www.azwater.gov.

Sincerely,

Groundwater Permitting and Wells Section

Arizona Department of Water Resources
Groundwater Permitting and Wells Section
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8527 • **www.azwater.gov**

Request to Change Well Information

RECEIVED
FEB - 9 2018
ADWR

FILE NUMBER: (22)D(4-9)28CAC
WELL REGISTRATION NUMBER: 55 - 227231

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.R.S. § 45-113 and A.A.C. R12-15-104

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Florence Copper Company
MAILING ADDRESS: 1575 W Hunt Hwy
CITY / STATE / ZIP CODE: Florence, AZ 85132
CONTACT PERSON NAME AND TITLE: Ian Ream, Senior Hydrogeologist
TELEPHONE NUMBER: 520-374-3984
FAX: 520-374-3999

Location of Well

WELL LOCATION ADDRESS (IF ANY) / OR CROSS STREETS:

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
4.0 S	9.0 E	28	SW ¼	NE ¼	SW ¼

LATITUDE				LONGITUDE			
° Degrees	' Minutes	" Seconds	N	° Degrees	' Minutes	" Seconds	W

METHOD OF LATITUDE/LONGITUDE (CHECK ONE): ☐ Google Earth ☐ Conventional Survey ☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade
*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): ☐ NAD-83 ☐ Other (*please specify*):

COUNTY ASSESSOR'S PARCEL ID NUMBER			COUNTY WHERE WELL IS LOCATED
BOOK	MAP	PARCEL	
		1001	PINAL

Type of Request (CHECK ONE)

☒ Change of Well Drilling Contractor *(Fill out Section 2)* ☐ Change of Well Ownership *(Fill out Section 3)* ☐ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR

FEE $120 per Well

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm PRIOR TO the commencement of well drilling or abandonment.

Current Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: ~~HydroResources~~ National EWP
DWR LICENSE NUMBER: 816
TELEPHONE NUMBER: (303) 857-7540
FAX:

New Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: CASCADE DRILLING, LP
DWR LICENSE NUMBER: 226
ROC LICENSE CATEGORY: A-4
TELEPHONE NUMBER: (623) 935-0124
FAX:

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP

FEE $30 per Well

Previous Well Owner	New Well Owner
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
MAILING ADDRESS	MAILING ADDRESS
CITY / STATE / ZIP CODE	CITY / STATE / ZIP CODE
CONTACT PERSON NAME AND TITLE	CONTACT PERSON NAME AND TITLE
TELEPHONE NUMBER / FAX	TELEPHONE NUMBER / FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN:

SECTION 5. OPTIONAL BY PROPERTY OWNER AND WELL OWNER ONLY

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. *(See instructions.)*

SECTION 6. WELL OWNER SIGNATURE

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Ian Ream, Senior Hydrogeologist
SIGNATURE OF WELL OWNER:
DATE: 2-08-2018

JW

Printed: 2/9/2018 2:39:08 PM

Arizona Department of Water Resources

1110 West Washington Street, Suite 310
Phoenix AZ 85007

Customer:
LINDA DOMBROWSKI
70 BLANCHARD ROAD
BURLINGTON, MA 01803

Receipt #: 18-56636
Office: MAIN OFFICE
Receipt Date: 02/09/2018
Sale Type: IN_PERSON
Cashier: WRPXA

Item No.	Function Code	AOBJ	Description	Ref ID	Qty	Unit Price	Ext Price
81920	WRFREV	4439-TT	CHANGE OF WELL DRILLER CONTRACTOR OR REISSUE	227231	1	120.00	120.00
						RECEIPT TOTAL:	**120.00**

Payment type: CREDIT CARD
Amount Paid: $120.00
Payment Received Date: 02/09/2018

Authorization 082959

Notes: FROM TTA.

No refund without valid receipt

Run Date: 02/21/2018

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location D 4.0 9.0 28 C A C

Well Reg.No 55 - 227231

AMA PINAL AMA

Registered Name AZ STATE LAND DEPT.
1616 W. ADAMS ST.
ATTN: LISA ATKINS
PHOENIX AZ 85007

File Type NEW WELLS (INTENTS OR APPLICATIONS)
Application/Issue Date 04/19/2017

Owner OWNER
Driller No. 816
Driller Name HYDRO RESOURCES - ROCKY MOUNTAIN, INC.
Driller Phone 303-857-7540
County PINAL

Well Type ENV - MONITOR
SubBasin ELOY
Watershed UPPER GILA RIVER
Registered Water Uses MONITORING
Registered Well Uses MONITOR
Discharge Method NO DISCHARGE METHOD LISTED
Power NO POWER CODE LISTED

Intended Capacity GPM 0.00

Well Depth	0.00	**Case Diam**	0.00	**Tested Cap**	0.00
Pump Cap.	0.00	**Case Depth**	0.00	**CRT**	
Draw Down	0.00	**Water Level**	0.00	**Log**	
		Acres Irrig	0.00	**Finish**	NO CASING CODE LISTED

Contamination Site: NO - NOT IN ANY REMEDIAL ACTION SITE

Tribe: Not in a tribal zone

Comments NP
Well O-02
AZ State Land Dept. Mineral Lease #11-026500

Current Action

2/21/2018 869 CHANGE OF DRILLER PACKET ISSUED
Action Comment: NTP

Action History

2/16/2018 865 CHANGE OF DRILLER RECEIVED
Action Comment: NTP

2/12/2018 869 CHANGE OF DRILLER PACKET ISSUED
Action Comment: jw

2/9/2018 865 CHANGE OF DRILLER RECEIVED
Action Comment: jw

4/25/2017 550 DRILLING AUTHORITY ISSUED
Action Comment: TNV

4/25/2017 555 DRILLER & OWNER PACKETS MAILED
Action Comment: TNV

4/19/2017 155 NOI RECEIVED FOR A NEW NON-PRODUCTION WELL
Action Comment: TNV

ARIZONA DEPARTMENT OF WATER RESOURCES

1110 W. Washington St. Suite 310
Phoenix, Arizona 85007

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILLING OPERATIONS

WELL REGISTRATION NO: **55-227231** WELL OWNER ID: O-02

AUTHORIZED DRILLER: **HYDRO RESOURCES - ROCKY MOUNTAIN, INC.** LICENSE NO: **816**

NOTICE OF INTENTION TO DRILL ENV - MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: **AZ STATE LAND DEPT. 1616 W. ADAMS ST. ATTN: LISA ATKINS PHOENIX, AZ, 85007**

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

SW 1/4 of the **NE** 1/4 of the **SW** 1/4 Section **28** Township **4.0** **SOUTH** Range **9.0** **EAST**

NO. OF WELLS IN THIS PROJECT: **1**

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE DAY OF **April 19, 2018**

Stella Murillo

GROUNDWATER PERMITTING AND WELLS

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING.

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT of WATER RESOURCES
1110 W. Washington St. Suite 310
Phoenix, AZ 85007
602-771-8500
azwater.gov

February 21, 2018

AZ STATE LAND DEPT.
1616 W. ADAMS ST.
ATTN: LISA ATKINS
PHOENIX, AZ 85007

DOUGLAS A. DUCEY
Governor

THOMAS BUSCHATZKE
Director

Registration No. 55- 227231
File Number: D(4-9) 28 CAC

Dear Well Applicant:

Enclosed is a copy of the Notice of Intention to Drill (NOI) a well which you or your driller recently filed with the Department of Water Resources. This letter is to inform you that the Department has approved the NOI and has mailed, or made available for download, a drilling authorization card to your designated well drilling contractor. The driller may not begin drilling until he/she has received the authorization, and must keep it in their possession at the well site during drilling. Although the issuance of this drill card authorizes you to drill the proposed well under state law, the drilling of the well may be subject to restrictions or regulations imposed by other entities.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, a new NOI must be filed and authorization from this Department received before proceeding with drilling. If the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed by your driller [as required by A.A.C. R12-15-816(F)].

If you change drillers, you must notify the Department of the new driller's identity on a Request to Change Well Information (form 55-71A). Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he/she receives a new drilling authorization card from the Department.

If you find it necessary to change the location of the proposed well(s), you may not proceed with drilling until you file an amended NOI with the Department. An amended drilling authorization card will then be issued to the well drilling contractor, which must be in their possession before drilling begins.

Arizona statute [A.R.S. § 45-600] requires registered well owners to file a Pump Installation Completion Report (form 55-56) with the Department within 30 days after the installation of pumping equipment, if authorized. A blank report is enclosed for your convenience. State statute also requires the driller to file a complete and accurate Well Drillers Report and Well Log (form 55-55) within 30 days after completion of drilling. A blank report form was provided to your driller with the drilling authorization card. You should insist and ensure that all of the required reports are accurately completed and timely filed with the Department.

Please be advised that Arizona statute [A.R.S. § 45-593(C)] requires a registered well owner to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (form 55-71A) that may be downloaded from the ADWR Internet website at www.azwater.gov.

Sincerely,

Nolan Powers

Groundwater Permitting and Wells Section

Arizona Department of Water Resources
Groundwater Permitting and Wells Section
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8527 • www.azwater.gov

Request to Change Well Information

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.R.S. § 45-113 and A.A.C. R12-15-104

Well ID: O-02

** PLEASE PRINT CLEARLY **

FILE NUMBER

WELL REGISTRATION NUMBER
55 - 227231

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
Florence Copper Company

MAILING ADDRESS
1575 W Hunt Hwy

CITY / STATE / ZIP CODE
Florence, AZ 85132

CONTACT PERSON NAME AND TITLE
Ian Ream, Senior Hydrogeologist

TELEPHONE NUMBER: 520-374-3984
FAX: 520-374-3999

Location of Well

WELL LOCATION ADDRESS (IF ANY) / OR CROSS STREETS

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
4.0 S	9.0 E	28	SW ¼	NE ¼	SW ¼

LATITUDE			LONGITUDE		
° Degrees	' Minutes	" N Seconds	° Degrees	' Minutes	" W Seconds

METHOD OF LATITUDE/LONGITUDE (CHECK ONE) ☐ *GPS: Hand-Held ☐ Google Earth ☐ Conventional Survey ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE)
☐ NAD-83 ☐ Other (*please specify*):

COUNTY ASSESSOR'S PARCEL ID NUMBER			COUNTY WHERE WELL IS LOCATED
BOOK	MAP	PARCEL	
		1001	PINAL

Type of Request (CHECK ONE)

☒ Change of Well Drilling Contractor *(Fill out Section 2)* ☐ Change of Well Ownership *(Fill out Section 3)* ☐ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR

FEE $120 per Well

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm PRIOR TO the commencement of well drilling or abandonment.

Current Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
Cascade Drilling LLP

DWR LICENSE NUMBER
226

TELEPHONE NUMBER: (623) 935-0124
FAX:

New Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
HydroResources

DWR LICENSE NUMBER: 816
ROC LICENSE CATEGORY: A-4

TELEPHONE NUMBER: (303) 857-7540
FAX:

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP

FEE $30 per Well

Previous Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER | FAX

New Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER | FAX

RECEIVED
FEB 16 2018
ARIZONA DEPARTMENT OF WATER RESOURCES

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

SECTION 5. OPTIONAL BY PROPERTY OWNER AND WELL OWNER ONLY

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. *(See instructions.)*

SECTION 6. WELL OWNER SIGNATURE

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE
Ian Ream, Senior Hydrogeologist

SIGNATURE OF WELL OWNER

DATE: 2-14-2018

Printed: 2/16/2018 9:53:20 AM

Arizona Department of Water Resources

1110 West Washington Street, Suite 310
Phoenix AZ 85007

Customer:
LINDA L. DOMBRAWSKI
70 BLANCHARD ROAD SUITE 204
BURLINGTON, MA 01803

Receipt #: 18-56793
Office: Engineering and Peri
Receipt Date: 02/16/2018
Sale Type: Mail
Cashier: WRPXA

Item No.	Function Code	AOBJ	Description	Ref ID	Qty	Unit Price	Ext Price
91	WRFREV	4439-12	CHANGE OF WELL DRILLER CONTRACTOR OR REISSUE		3	120.00	360.00
					RECEIPT TOTAL:		**360.00**

Payment type: CREDIT CARD
Amount Paid: $360.00
Payment Received Date: 02/16/2018

Authorization 011621

Notes: Credit Card Payment for $360.00 is for well registration number 55-227231, 55-227233 and 55-227235

No refund without valid receipt

Arizona Department of Water Resources
Groundwater Permitting and Wells Section
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8500 • (602) 771-8690
· www.azwater.gov ·

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

$150 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - $150 check or money order for the filing fee.
  - Well construction diagram, labeling all specifications listed in Section 6 and Section 7.

  Authority for fee: A.R.S. § 45-596 and A.A.C. R12-15-104.

AMA / INA	B	SB
Pinal	PIN	11
RECEIVED DATE	WS	
4/19/2017	08 UGR	
ISSUED DATE	REMEDIAL ACTION SITE	
4/25/2017	000 —	

FILE NUMBER: 55-922804.0001
WELL REGISTRATION NUMBER: 55 - 227231

SECTION 1. REGISTRY INFORMATION

To determine the location of well, please refer to the Well Registry Map (https://gisweb.azwater.gov/WellRegistry/Default.aspx) and/or Google Earth (http://www.earthpoint.us/Townships.aspx)

Well Type

CHECK ONE

- ☒ Monitor
- ☐ Piezometer
- ☐ Vadose Zone
- ☐ Air Sparging
- ☐ Soil Vapor Extraction
- ☐ Other (*please specify*):

Proposed Action

CHECK ONE

- ☒ Drill New Well
- ☐ Deepen
- ☐ Modify

APR 19 2017

WELL REGISTRATION NUMBER (*if Deepening or Modifying*)
55 -

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP(N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
4.0 S	9.0 E	28	SW ¼	NE ¼	SW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
		1001

COUNTY WHERE WELL IS LOCATED: PINAL

SECTION 2. OWNER INFORMATION

Land Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: AZ State Land Dept (Mineral Lease # 11-026500)
MAILING ADDRESS: 1616 W Adams St
CITY / STATE / ZIP CODE: Phoenix, AZ 85007
CONTACT PERSON NAME AND TITLE: Lisa Atkins, State Land Commissioner
TELEPHONE NUMBER: (602) 542-4631
FAX:

Well Owner (*check this box if Land Owner and Well Owner are same* ☐)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: Florence Copper, Inc.
MAILING ADDRESS: 1575 W Hunt Hwy
CITY / STATE / ZIP CODE: Florence, AZ 85132
CONTACT PERSON NAME AND TITLE: Ian Ream, Senior Hydrogeologist
TELEPHONE NUMBER: (520) 374-3984
FAX: (520) 374-3999

SECTION 3. DRILLING AUTHORIZATION

Drilling Firm

NAME: National EWP
DWR LICENSE NUMBER: 823
ROC LICENSE CATEGORY: A-4
TELEPHONE NUMBER: (480) 558-3500
FAX: 480-558-3525
EMAIL ADDRESS: jstephens@nationalewp.com

Consultant (*if applicable*)

CONSULTING FIRM: Haley & Aldrich, Inc.
CONTACT PERSON NAME: Mark Nicholls
TELEPHONE NUMBER: 602-760-2423
FAX: 602-760-2448
EMAIL ADDRESS: mnicholls@haleyaldrich.com

SECTION 4.

Questions	Yes	No	Explanation:
1. Are all annular spaces between the casing(s) and the borehole for the placement of grout at least 2 inches?	☒	☐	2-inch annular spaces are special standards required for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
2. Is the screened or perforated interval of casing greater than 100 feet in length?	☒	☐	100-foot maximum screen intervals are a special standard for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
3. Are you requesting a variance to use thermoplastic casing in lieu of steel casing in the surface seal?	☐	☒	The wells must be constructed in a vault. Pursuant to A.A.C. R12-15-801 (27) a "vault" is defined as a tamper-resistant watertight structure used to complete a well below the land surface.
4. Is there another well name or identification number associated with this well? (e.g., MW-1, PZ2, 06-04, etc.)	☒	☐	If yes, please state O-02
5. Have construction plans been coordinated with the Arizona Department of Environmental Quality?	☒	☐	If yes, please state agency contact & phone number David Haag, 602-771-4669
6. For monitor wells, is dedicated pump equipment to be installed?	☐	☒	If yes, please state design pump capacity (*Gallons per Minute*)
7. Is this well a new well located in an Active Management Area AND intended to pump water for the purpose of remediating groundwater?	☐	☒	You must also file a supplemental form A.R.S. § 45-454(c) & (f) unless the well is a replacement well and the total number of operable wells on the site is not increasing. (*See instructions*)
8. Will the well registration number be stamped on the vault cover or on the upper part of the casing?	☒	☐	If no, where will the registration number be placed?

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

WELL REGISTRATION NUMBER 55 - 227231

SECTION 6. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE

- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☒ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (*please specify*):

DATE CONSTRUCTION TO BEGIN: 05/01/2017

Method of Well Development

CHECK ONE

- ☒ Airlift
- ☐ Bail
- ☐ Surge Block
- ☐ Surge Pump
- ☐ Other (*please specify*):

Method of Sealing at Reduction Points

CHECK ONE

- ☒ None
- ☐ Welded
- ☐ Swedged
- ☐ Packed
- ☐ Other (*please specify*):

Grout Emplacement Method

CHECK ONE

- ☒ Tremie Pumped *(Recommended)*
- ☐ Gravity
- ☐ Pressure Grout
- ☐ Other (*please specify*):

Surface or Conductor Casing

CHECK ONE

- ☐ Flush Mount in a vault
- ☒ Extends at least 1' above grade

SECTION 7. PROPOSED WELL CONSTRUCTION PLAN (attach additional page if needed)

Attach a well construction diagram labeling all specifications below.

Per Driller TW

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	18
20	1210	10

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	14	☒	☐	☐		☒	☐	☐	☐	☐		
20	500	5	☒	☐	☐	f. bars/ last reinforced	☒	☐	☐	☐	☐		
500	1200	5	☐	☒	☐		☐	☐	☐	☐	☒		0.020

Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	490	☐	☐	☒	☐	☐	☐	☐		☐	☐	
490	495	☐	☐	☐	☐	☐	☐	☐		☒	☐	No. 30-70
495	1210	☐	☐	☐	☐	☐	☐	☐		☒	☐	No.10-20

IF THIS WELL HAS NESTED CASINGS, SPECIFY NUMBER OF CASING STRINGS:

EXPECTED DEPTH TO WATER *(Feet Below Ground Surface)*: 220

SECTION 8. PERMISSION TO ACCESS

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. *(See instructions.)*

SECTION 9. LAND OWNER AND WELL OWNER SIGNATURE

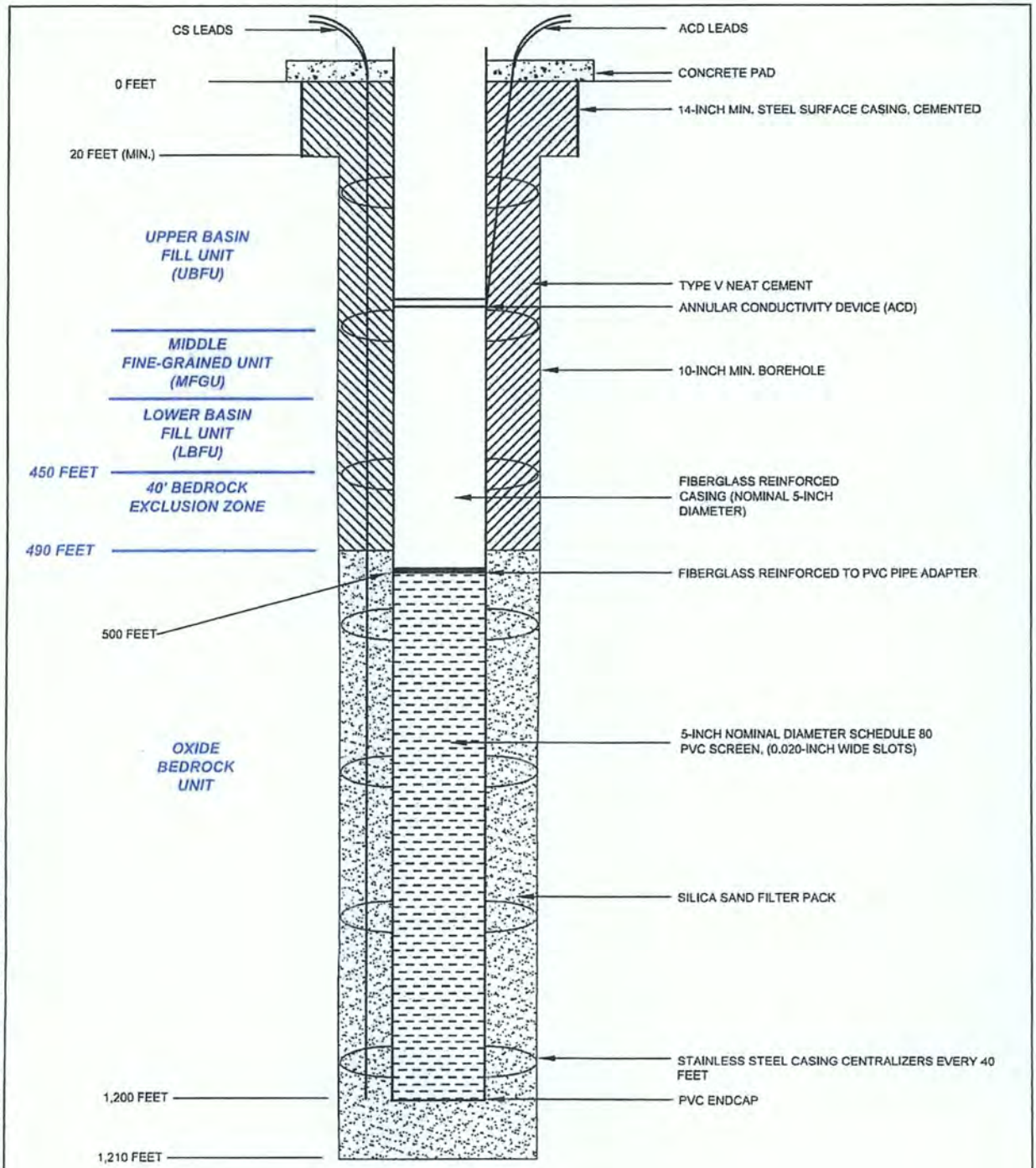
I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and

Land Owner	Well Owner *(if different from Land Owner; See instructions)*
PRINT NAME AND TITLE	PRINT NAME AND TITLE Ian Ream, Senior Hydrogeologist
SIGNATURE OF LAND OWNER	SIGNATURE OF WELL OWNER
DATE	DATE 4-17-2017
☐ By checking this box, you agree to allow ADWR to contact you via electronic mail.	☒ By checking this box, you agree to allow ADWR to contact you via electronic mail.
EMAIL ADDRESS	EMAIL ADDRESS IanReam@florencecopper.com

SECTION 5. Well Construction Diagram

Provide a well construction diagram showing all existing well construction features listed in Section 6 and Section 7.

See attached well diagram.



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HALEY ALDRICH

FLORENCE COPPER, INC.
FLORENCE, ARIZONA

OBSERVATION WELL CONSTRUCTION DIAGRAM

FLORENCE COPPER INC.

SCALE: NOT TO SCALE

FIGURE 1

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

WELL REGISTRATION NUMBER
55 -

SECTION 6. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE

- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☒ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other *(please specify)*:

DATE CONSTRUCTION TO BEGIN
05/01/2017

Method of Well Development

CHECK ONE

- ☒ Airlift
- ☐ Bail
- ☐ Surge Block
- ☐ Surge Pump
- ☐ Other *(please specify)*:

Grout Emplacement Method

CHECK ONE

- ☒ Tremie Pumped *(Recommended)*
- ☐ Gravity
- ☐ Pressure Grout
- ☐ Other *(please specify)*:

Method of Sealing at Reduction Points

CHECK ONE

- ☒ None
- ☐ Welded
- ☐ Swedged
- ☐ Packed
- ☐ Other *(please specify)*:

Surface or Conductor Casing

CHECK ONE

- ☐ Flush Mount in a vault
- ☒ Extends at least 1' above grade

SECTION 7. PROPOSED WELL CONSTRUCTION PLAN (attach additional page if needed)

Attach a well construction diagram labeling all specifications below.

Corrected Typo

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	18
20	1210	10

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	14	☒	☐	☐		☒	☐	☐	☐	☐		
0	500	5	☐	☐	☐	FRP	☒	☐	☐	☐	☐		
500	1200	5	☐	☒	☐		☐	☐	☐	☐	☒		0.020

Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	490	☐	☐	☒	☐	☐	☐	☐		☐	☐	
490	495	☐	☐	☐	☐	☐	☐	☐		☒	☐	No. 30-70
495	1210	☐	☐	☐	☐	☐	☐	☐		☒	☐	No.10-20

IF THIS WELL HAS NESTED CASINGS, SPECIFY NUMBER OF CASING STRINGS

EXPECTED DEPTH TO WATER *(Feet Below Ground Surface)*
220

SECTION 8. PERMISSION TO ACCESS

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. *(See instructions.)*

SECTION 9. LAND OWNER AND WELL OWNER SIGNATURE

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and

Land Owner	Well Owner *(if different from Land Owner; See instructions)*
PRINT NAME AND TITLE	PRINT NAME AND TITLE Ian Ream, Senior Hydrogeologist
SIGNATURE OF LAND OWNER	SIGNATURE OF WELL OWNER
DATE	DATE
☐ By checking this box, you agree to allow ADWR to contact you via electronic mail.	☒ By checking this box, you agree to allow ADWR to contact you via electronic mail.
EMAIL ADDRESS	EMAIL ADDRESS IanReam@florencecopper.com

Arizona Department of Water Resources
Groundwater Permitting and Wells
PO Box 36020 • Phoenix, Arizona 85067-6020
(602) 771-8527 • 602-771-8500
www.azwater.gov

Well Driller Report and Well Log

THIS REPORT MUST BE FILED WITHIN **30 DAYS** OF COMPLETING THE WELL.

PLEASE PRINT CLEARLY USING BLACK OR BLUE INK

FILE NUMBER
D(4-9) 28 CAC
WELL REGISTRATION NUMBER
55 - 227231
PERMIT NUMBER (IF ISSUED)

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

Mail To:

NAME	DWR LICENSE NUMBER
HYDRO RESOURCES - ROCKY MOUNTAIN, INC.	816
ADDRESS: 13027 COUNTY ROAD 18, UNIT C	TELEPHONE NUMBER: 303-857-7540
CITY / STATE / ZIP: FORT LUPTON, CO, 80621-9217	FAX

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: AZ STATE LAND DEPT.

MAILING ADDRESS: 1616 W. ADAMS ST.

CITY / STATE / ZIP: PHOENIX, AZ, 85007

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 602 542-4631

FAX:

WELL NAME (e.g., MW-1, PZ-3, lot 25 Well, Smith Well, etc.): O-02

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE 1/4	40 ACRE 1/4	10 ACRE 1/4

LATITUDE			LONGITUDE		
° DEGREES	' MINUTES	"N SECONDS	° DEGREES	' MINUTES	"W SECONDS

METHOD OF LATITUDE/LONGITUDE (CHECK ONE)

☐ *GPS: Hand-Held ☐ Conventional Survey ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE)

☐ *GPS: Hand-Held ☐ Conventional Survey ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE)

☐ NAD-83 ☐ Other (please specify)

COUNTY	ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)		
	BOOK	MAP	PARCEL

SECTION 3. WELL CONSTRUCTION DETAILS

Drilling Method

CHECK ONE

☐ Air Rotary
☐ Bored or Augered
☐ Cable Tool
☐ Dual Rotary
☐ Mud Rotary
☐ Reverse Circulation
☐ Driven
☐ Jetted
☐ Air Percussion / Odex Tubing
☐ Other (please specify)

Method of Well Development

CHECK ONE

☐ Airlift
☐ Bail
☐ Surge Block
☐ Surge Pump
☐ Other (please specify)

Condition of Well

CHECK ONE

☐ Capped
☐ Pump Installed

Method of Sealing at Reduction Points

CHECK ONE

☐ None
☐ Packed
☐ Swedged
☐ Welded
☐ Other (please specify)

Construction Dates

DATE WELL CONSTRUCTION STARTED:

DATE WELL CONSTRUCTION COMPLETED:

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

SIGNATURE OF QUALIFYING PARTY	DATE

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 227231

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILD) (attach additional page if needed)

Depth

DEPTH OF BORING	DEPTH OF COMPLETED WELL
Feet Below Land Surface	Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
Feet Below Land Surface			☐ Valve ☐ Other:

Borehole

DEPTH FROM SURFACE		
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)

Installed Casing

DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)						
FROM (feet)	TO (feet)	OUTER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE (inches)

Installed Annular Material

DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
						BENTONITE						
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 227231

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	**Description** Describe material, grain size, color, etc.	Check (X) every interval where water was encountered (if known)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 227231

SECTION 6. WELL SITE PLAN			
NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)		
	BOOK	MAP	PARCEL
AZ STATE LAND DEPT.			

- Required for all wells, please draw the following: (1) the boundaries of property on which the well was located; (2) the well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.

Run Date: 04/25/2017

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location D 4.0 9.0 28 C A C

Well Reg.No 55 - 227231

AMA PINAL AMA

Registered Name AZ STATE LAND DEPT.
1616 W. ADAMS ST.
ATTN: LISA ATKINS
PHOENIX AZ 85007

File Type NEW WELLS (INTENTS OR APPLICATIONS)
Application/Issue Date 04/19/2017

Owner OWNER
Driller No. 823
Driller Name NATIONAL EWP, INC.
Driller Phone 480-558-3500
County PINAL

Intended Capacity GPM 0.00

Well Type ENV - MONITOR
SubBasin ELOY
Watershed UPPER GILA RIVER
Registered Water Uses MONITORING
Registered Well Uses MONITOR
Discharge Method NO DISCHARGE METHOD LISTED
Power NO POWER CODE LISTED

Well Depth	0.00	**Case Diam**	0.00	**Tested Cap**	0.00
Pump Cap.	0.00	**Case Depth**	0.00	**CRT**	
Draw Down	0.00	**Water Level**	0.00	**Log**	
		Acres Irrig	0.00	**Finish**	NO CASING CODE LISTED

Contamination Site: NO - NOT IN ANY REMEDIAL ACTION SITE

Tribe: Not in a tribal zone

Comments Well O-02
AZ State Land Dept. Mineral Lease #11-026500

Current Action

4/25/2017 555 DRILLER & OWNER PACKETS MAILED
Action Comment: TNV

Action History

4/25/2017 550 DRILLING AUTHORITY ISSUED
Action Comment: TNV

4/19/2017 155 NOI RECEIVED FOR A NEW NON-PRODUCTION WELL
Action Comment: TNV

ARIZONA DEPARTMENT OF WATER RESOURCES

1110 W. Washington St. Suite 310
Phoenix, Arizona 85007

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILLING OPERATIONS

WELL REGISTRATION NO: **55-227231** WELL OWNER ID: O-02

AUTHORIZED DRILLER: **NATIONAL EWP, INC.** LICENSE NO: **823**

NOTICE OF INTENTION TO DRILL ENV - MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: **AZ STATE LAND DEPT. 1616 W. ADAMS ST. ATTN: LISA ATKINS PHOENIX, AZ, 85007**

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

SW 1/4 of the **NE** 1/4 of the **SW** 1/4 Section **28** Township **4.0** **SOUTH** Range **9.0** **EAST**

NO. OF WELLS IN THIS PROJECT: **1**

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE DAY OF **April 19, 2018**

Stella Murillo

GROUNDWATER PERMITTING AND WELLS

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING.

ARIZONA DEPARTMENT of WATER RESOURCES
1110 W. Washington St. Suite 310
Phoenix, AZ 85007
602-771-8500
azwater.gov

April 25, 2017

AZ STATE LAND DEPT.
1616 W. ADAMS ST.
ATTN: LISA ATKINS
PHOENIX, AZ 85007

Registration No. 55- 227231
File Number: D(4-9) 28 CAC

Dear Well Applicant:

Enclosed is a copy of the Notice of Intention to Drill (NOI) a well which you or your driller recently filed with the Department of Water Resources. This letter is to inform you that the Department has approved the NOI and has mailed, or made available for download, a drilling authorization card to your designated well drilling contractor. The driller may not begin drilling until he/she has received the authorization, and must keep it in their possession at the well site during drilling. Although the issuance of this drill card authorizes you to drill the proposed well under state law, the drilling of the well may be subject to restrictions or regulations imposed by other entities.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, a new NOI must be filed and authorization from this Department received before proceeding with drilling. If the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed by your driller [as required by A.A.C. R12-15-816(F)].

If you change drillers, you must notify the Department of the new driller's identity on a Request to Change Well Information (form 55-71A). Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he/she receives a new drilling authorization card from the Department.

If you find it necessary to change the location of the proposed well(s), you may not proceed with drilling until you file an amended NOI with the Department. An amended drilling authorization card will then be issued to the well drilling contractor, which must be in their possession before drilling begins.

Arizona statute [A.R.S. § 45-600] requires registered well owners to file a Pump Installation Completion Report (form 55-56) with the Department within 30 days after the installation of pumping equipment, if authorized. A blank report is enclosed for your convenience. State statute also requires the driller to file a complete and accurate Well Drillers Report and Well Log (form 55-55) within 30 days after completion of drilling. A blank report form was provided to your driller with the drilling authorization card. You should insist and ensure that all of the required reports are accurately completed and timely filed with the Department.

Please be advised that Arizona statute [A.R.S. § 45-593(C)] requires a registered well owner to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (form 55-71A) that may be downloaded from the ADWR Internet website at www.azwater.gov.

Sincerely,

Groundwater Permitting and Wells Section

Arizona Department of Water Resources
Groundwater Permitting and Wells Section
P.O. Box 36020 Phoenix, Arizona 85067-6020
(602) 771-8500 • (602) 771-8690
· www.azwater.gov ·

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

$150 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - $150 check or money order for the filing fee.
  - Well construction diagram, labeling all specifications listed in Section 6 and Section 7.

  Authority for fee: A.R.S. § 45-596 and A.A.C. R12-15-104.

AMA / INA	B	SB
Pinal	PIN	11
RECEIVED DATE	WS	
4/19/2017	08 UGR	
ISSUED DATE	REMEDIAL ACTION SITE	
4/25/2017	000 —	

FILE NUMBER: D(4-9)28 CAC

WELL REGISTRATION NUMBER: 55 - 227231

SECTION 1. REGISTRY INFORMATION

To determine the location of well, please refer to the Well Registry Map (https://gisweb.azwater.gov/WellRegistry/Default.aspx) and/or Google Earth (http://www.earthpoint.us/Townships.aspx)

Well Type

CHECK ONE

- [X] Monitor
- [ ] Piezometer
- [ ] Vadose Zone
- [ ] Air Sparging
- [ ] Soil Vapor Extraction
- [ ] Other (*please specify*):

Proposed Action

CHECK ONE

- [X] Drill New Well
- [ ] Deepen
- [ ] Modify

RECEIVED APR 19 2017

WELL REGISTRATION NUMBER (*if Deepening or Modifying*)
55 -

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP(N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
4.0 S	9.0 E	28	SW ¼	NE ¼	SW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
		1001

COUNTY WHERE WELL IS LOCATED: PINAL

SECTION 2. OWNER INFORMATION

Land Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: AZ State Land Dept (Mineral Lease # 11-026500)
MAILING ADDRESS: 1616 W Adams St
CITY / STATE / ZIP CODE: Phoenix, AZ 85007
CONTACT PERSON NAME AND TITLE: Lisa Atkins, State Land Commissioner
TELEPHONE NUMBER: (602) 542-4631
FAX:

Well Owner (*check this box if Land Owner and Well Owner are same* [ ])

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: Florence Copper, Inc.
MAILING ADDRESS: 1575 W Hunt Hwy
CITY / STATE / ZIP CODE: Florence, AZ 85132
CONTACT PERSON NAME AND TITLE: Ian Ream, Senior Hydrogeologist
TELEPHONE NUMBER: (520) 374-3984
FAX: (520) 374-3999

SECTION 3. DRILLING AUTHORIZATION

Drilling Firm

NAME: National EWP
DWR LICENSE NUMBER: 823
ROC LICENSE CATEGORY: A-4
TELEPHONE NUMBER: (480) 558-3500
FAX: 480-558-3525
EMAIL ADDRESS: jstephens@nationalewp.com

Consultant (*if applicable*)

CONSULTING FIRM: Haley & Aldrich, Inc.
CONTACT PERSON NAME: Mark Nicholls
TELEPHONE NUMBER: 602-760-2423
FAX: 602-760-2448
EMAIL ADDRESS: mnicholls@haleyaldrich.com

SECTION 4.

Questions	Yes	No	Explanation:
1. Are all annular spaces between the casing(s) and the borehole for the placement of grout at least 2 inches?	[X]	[ ]	2-inch annular spaces are special standards required for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
2. Is the screened or perforated interval of casing greater than 100 feet in length?	[X]	[ ]	100-foot maximum screen intervals are a special standard for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
3. Are you requesting a variance to use thermoplastic casing in lieu of steel casing in the surface seal?	[ ]	[X]	The wells must be constructed in a vault. Pursuant to A.A.C. R12-15-801 (27) a "vault" is defined as a tamper-resistant watertight structure used to complete a well below the land surface.
4. Is there another well name or identification number associated with this well? (e.g., MW-1, PZ2, 06-04, etc.)	[X]	[ ]	If yes, please state O-02
5. Have construction plans been coordinated with the Arizona Department of Environmental Quality?	[X]	[ ]	If yes, please state agency contact & phone number David Haag, 602-771-4669
6. For monitor wells, is dedicated pump equipment to be installed?	[ ]	[X]	If yes, please state design pump capacity (*Gallons per Minute*)
7. Is this well a new well located in an Active Management Area **AND** intended to pump water for the purpose of remediating groundwater?	[ ]	[X]	You must also file a supplemental form A.R.S. § 45-454(c) & (f) unless the well is a replacement well and the total number of operable wells on the site is not increasing. (*See instructions*)
8. Will the well registration number be stamped on the vault cover or on the upper part of the casing?	[X]	[ ]	If no, where will the registration number be placed?

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

WELL REGISTRATION NUMBER 55 - 227231

SECTION 6. WELL CONSTRUCTION DETAILS

Drill Method (CHECK ONE)

- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☒ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (*please specify*):

DATE CONSTRUCTION TO BEGIN: 05/01/2017

Method of Well Development (CHECK ONE)

- ☒ Airlift
- ☐ Bail
- ☐ Surge Block
- ☐ Surge Pump
- ☐ Other (*please specify*):

Method of Sealing at Reduction Points (CHECK ONE)

- ☒ None
- ☐ Welded
- ☐ Swedged
- ☐ Packed
- ☐ Other (*please specify*):

Grout Emplacement Method (CHECK ONE)

- ☒ Tremie Pumped (*Recommended*)
- ☐ Gravity
- ☐ Pressure Grout
- ☐ Other (*please specify*):

Surface or Conductor Casing (CHECK ONE)

- ☐ Flush Mount in a vault
- ☒ Extends at least 1' above grade

SECTION 7. PROPOSED WELL CONSTRUCTION PLAN (attach additional page if needed)

Attach a well construction diagram labeling all specifications below.

Per Driller TW

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	18
20	1210	10

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T): STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T): BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	14	☒	☐	☐		☒	☐	☐	☐	☐		
0	500	5	☒	☐	☐	F. bars last reinforced	☒	☐	☐	☐	☐		
500	1200	5	☐	☒	☐		☐	☐	☐	☐	☒		0.020

Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T): NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE: GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK: SAND	GRAVEL	SIZE
0	490	☐	☐	☒	☐	☐	☐	☐		☐	☐	
490	495	☐	☐	☐	☐	☐	☐	☐		☒	☐	No. 30-70
495	1210	☐	☐	☐	☐	☐	☐	☐		☒	☐	No.10-20

IF THIS WELL HAS NESTED CASINGS, SPECIFY NUMBER OF CASING STRINGS:

EXPECTED DEPTH TO WATER (*Feet Below Ground Surface*): 220

SECTION 8. PERMISSION TO ACCESS

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. (*See instructions.*)

SECTION 9. LAND OWNER AND WELL OWNER SIGNATURE

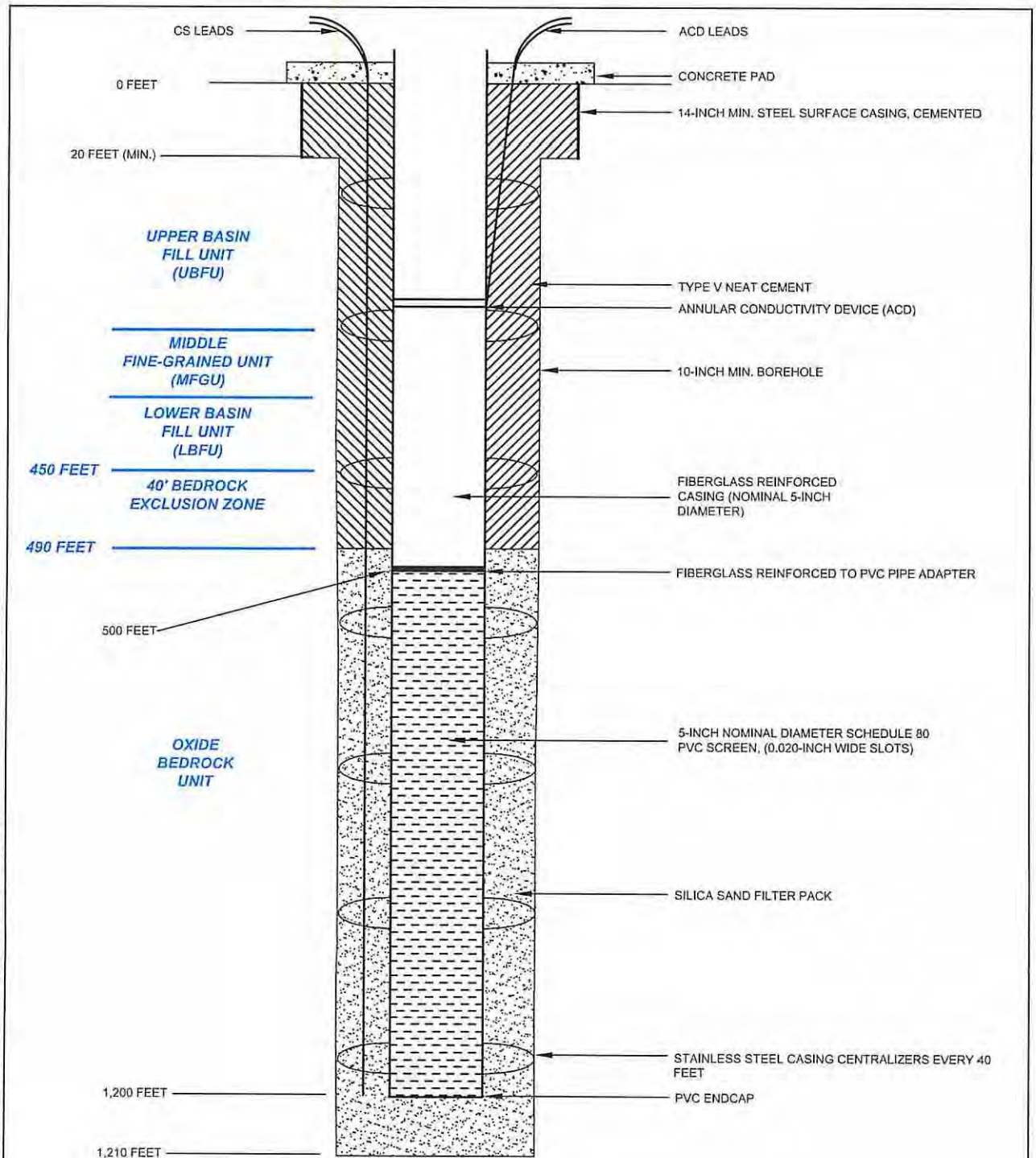
I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and

Land Owner	Well Owner (*if different from Land Owner; See instructions*)
PRINT NAME AND TITLE	PRINT NAME AND TITLE: Ian Ream, Senior Hydrogeologist
SIGNATURE OF LAND OWNER	SIGNATURE OF WELL OWNER
DATE	DATE: 4-17-2017
☐ By checking this box, you agree to allow ADWR to contact you via electronic mail.	☒ By checking this box, you agree to allow ADWR to contact you via electronic mail.
EMAIL ADDRESS	EMAIL ADDRESS: IanReam@florencecopper.com

SECTION 5. Well Construction Diagram

Provide a well construction diagram showing all existing well construction features listed in Section 6 and Section 7.

See attached well diagram.



G:\PROJECTS\CURIS RESOURCES\38706-CURIS FEASIBILITY\DRAWINGS\2014 UIC APP\FIGURES MM-3.DWG

HALEY ALDRICH

FLORENCE COPPER, INC.
FLORENCE, ARIZONA

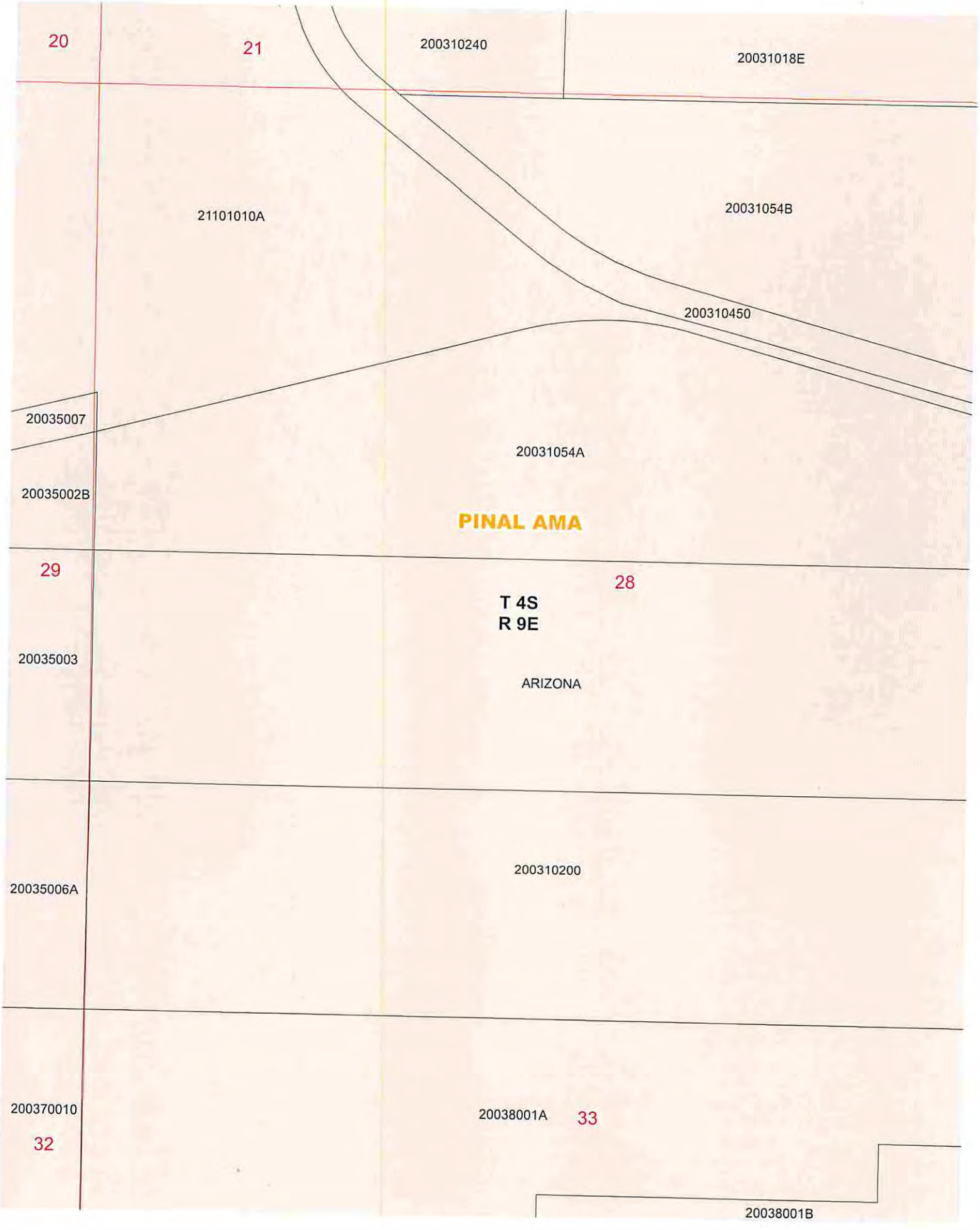
OBSERVATION WELL CONSTRUCTION DIAGRAM

FLORENCE COPPER INC.

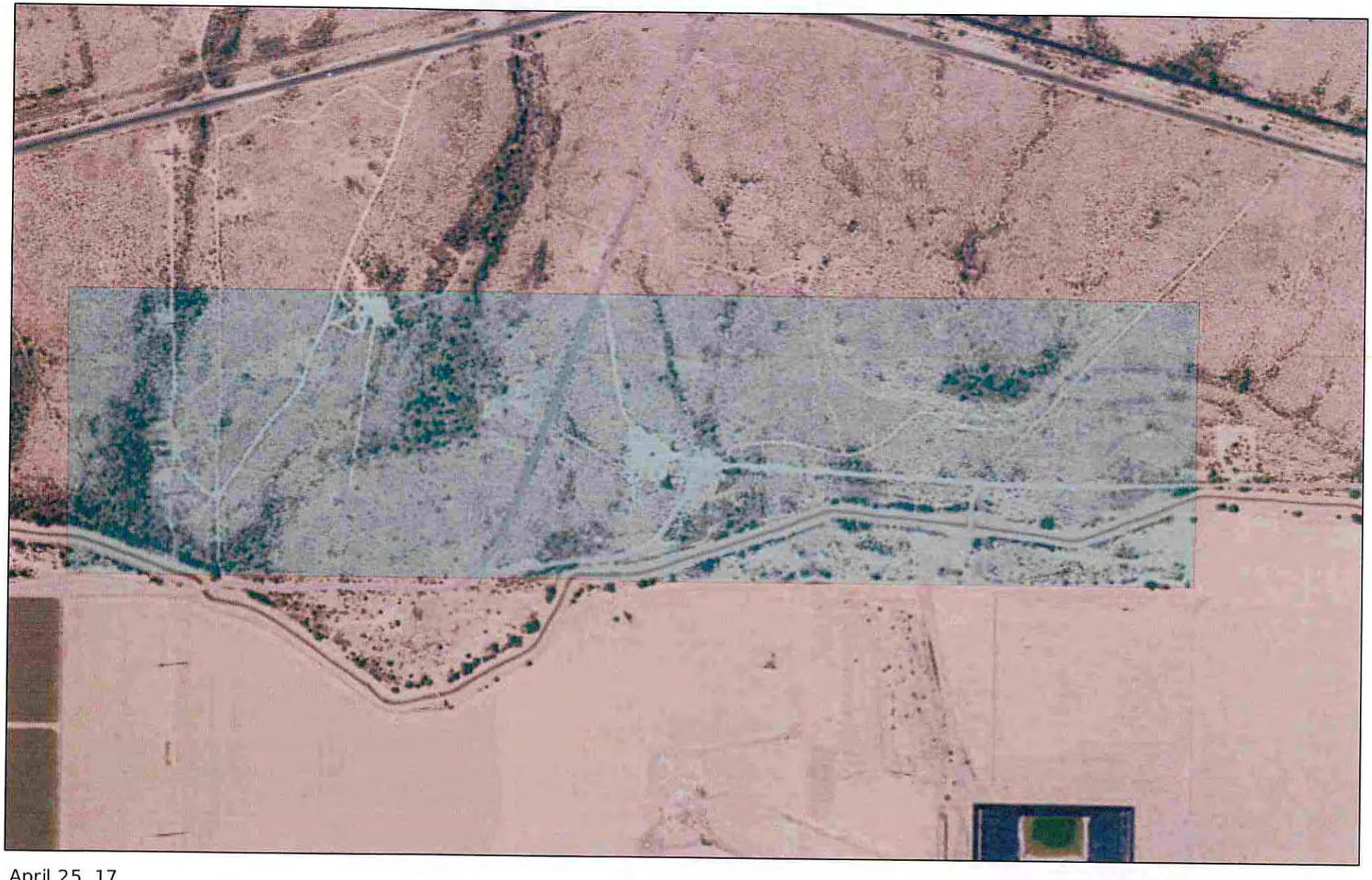
SCALE: NOT TO SCALE

FIGURE 1


20
21
200310240
20031018E
21101010A
20031054B
200310450
20035007
20031054A
20035002B
PINAL AMA
29
28
T 4S
R 9E
20035003
ARIZONA
200310200
20035006A
200370010
20038001A
33
32
20038001B


20
21
200310240
20031018E
21101010A
20031054B
200310450
20035007
20031054A
20035002B
PINAL AMA
29
28
T 4S
R 9E
20035003
ARIZONA
200310200
20035006A
200370010
20038001A
33
32
20038001B

Arizona State Land Department



April 25, 17

1:9,028

0 0.075 0.15 0.3 mi

0 0.1 0.2 0.4 km

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User

Torren Valdez

From: Justina Speas <jspeas@nationalewp.com>
Sent: Wednesday, April 26, 2017 10:10 AM
To: Torren Valdez
Subject: FW: ADWR Issue
Attachments: Rev_pg3_FRP.pdf

Please see below.

Thank you,

Justina Speas
Office Manager
National EWP, Inc.
1200 W. San Pedro St.
Gilbert, AZ 85233
480-558-3500 PH
480-798-4722 CL
480-558-3525 FX
jspeas@nationalewp.com

From: Candreva, Lauren [mailto:LCandreva@haleyaldrich.com]
Sent: Wednesday, April 26, 2017 10:05 AM
To: Justina Speas <jspeas@nationalewp.com>
Cc: Ian Ream <IanReam@florencecopper.com>
Subject: RE: ADWR Issue

Hi Justina,
Please see the attached pg 3 of the NOI form, this form will be the same for all 7 wells since it does not contain any of the well names or locations. However, it is also the page that has the signatureblock, so please confirm with your ADWR contact that it will not require a signature to complete this file.
Thanks,
Lauren

From: Justina Speas [mailto:jspeas@nationalewp.com]
Sent: Tuesday, April 25, 2017 2:09 PM
To: Candreva, Lauren <LCandreva@haleyaldrich.com>
Cc: Ian Ream <IanReam@florencecopper.com>
Subject: ADWR Issue

Good Afternoon,

I just spoke with Torren Valdez with ADWR, and he informed me of an error with some of the NOI's we just turned in. On O-01 through O-07 the well construction plan shows 0 to 500' as steel, but that is not what the diagram shows.

He said we can just fix the page with the construction plan and email him a copy, and he will put it with the file.

Justina Speas
Office Manager

National EWP, Inc.
1200 W. San Pedro St.
Gilbert, AZ 85233
480-558-3500 PH
480-798-4722 CL
480-558-3525 FX
jspeas@nationalewp.com

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

WELL REGISTRATION NUMBER
55 -

SECTION 6. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE

- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☒ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (*please specify*):

DATE CONSTRUCTION TO BEGIN
05/01/2017

Method of Well Development

CHECK ONE

- ☒ Airlift
- ☐ Bail
- ☐ Surge Block
- ☐ Surge Pump
- ☐ Other (*please specify*):

Grout Emplacement Method

CHECK ONE

- ☒ Tremie Pumped *(Recommended)*
- ☐ Gravity
- ☐ Pressure Grout
- ☐ Other (*please specify*):

Method of Sealing at Reduction Points

CHECK ONE

- ☒ None
- ☐ Welded
- ☐ Swedged
- ☐ Packed
- ☐ Other (*please specify*):

Surface or Conductor Casing

CHECK ONE

- ☐ Flush Mount in a vault
- ☒ Extends at least 1' above grade

SECTION 7. PROPOSED WELL CONSTRUCTION PLAN (attach additional page if needed)

Attach a well construction diagram labeling all specifications below.

Corrected Info Page

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	18
20	1210	10

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	14	☒	☐	☐		☒	☐	☐	☐	☐		
0	500	5	☐	☐	☐	FRP	☒	☐	☐	☐	☐		
500	1200	5	☐	☒	☐		☐	☐	☐	☐	☒		0.020

Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	490	☐	☐	☒	☐	☐	☐	☐		☐	☐	
490	495	☐	☐	☐	☐	☐	☐	☐		☒	☐	No. 30-70
495	1210	☐	☐	☐	☐	☐	☐	☐		☒	☐	No.10-20

IF THIS WELL HAS NESTED CASINGS, SPECIFY NUMBER OF CASING STRINGS

EXPECTED DEPTH TO WATER *(Feet Below Ground Surface)*
220

SECTION 8. PERMISSION TO ACCESS

☐ By checking this box, I hereby provide ADWR permission to enter the property for the purpose of taking water level measurements at this well. *(See instructions.)*

SECTION 9. LAND OWNER AND WELL OWNER SIGNATURE

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and

Land Owner	Well Owner *(if different from Land Owner; See instructions)*
PRINT NAME AND TITLE	PRINT NAME AND TITLE Ian Ream, Senior Hydrogeologist
SIGNATURE OF LAND OWNER	SIGNATURE OF WELL OWNER
DATE	DATE
☐ By checking this box, you agree to allow ADWR to contact you via electronic mail.	☒ By checking this box, you agree to allow ADWR to contact you via electronic mail.
EMAIL ADDRESS	EMAIL ADDRESS IanReam@florencecopper.com

Torren Valdez

From: Robert Harding <RHarding@azland.gov>
Sent: Tuesday, April 25, 2017 9:49 AM
To: Torren Valdez
Subject: ASLD (Landowner) Approval for NOI's - Lease #11-26500

FYI

From: Robert Harding
Sent: Wednesday, March 15, 2017 2:31 PM
To: samurillo@azwater.gov
Cc: Fred Breedlove <FBreedlove@azland.gov>; Joe Dixon <jdixon@azland.gov>; Heide Kocsis <HKocsis@azland.gov>
Subject: ASLD (Landowner) Approval for NOI's - Lease #11-26500

Stella,

As you are aware, Florence Copper is in the presence of registering a number of existing wells on State Trust Lease #11-26500 which were originally installed using single registration numbers to permit multiple monitor well installations. A number of these wells will then be permanently abandoned in accordance with Arizona Department of Water Resources (ADWR) requirements. The lessee, Florence Copper, has discussed the specifics of this registration/abandonment process with the Arizona State Land Department (ASLD), and the Department has no objection to the proposed activities.

Please accept this email as documentation of Landowner's approval for the Notice of Intent (NOI) application filings for well registration and abandonment, currently being submitted to ADWR by Florence Copper on ASLD Lease #11-26500, Section 28, T4S, R9E.

Thank you.
Best regards,

Bob Harding
Hydrologist
Water Rights Section
Arizona State land Department
602.542.2672
rharding@azland.gov

Arizona State Land Department

Torren Valdez

From: Ian Ream <IanReam@florencecopper.com>
Sent: Friday, January 13, 2017 9:06 AM
To: Torren Valdez
Subject: Re: Map of monitor well locations

Hi Torren,

The pumps will be QED micro purge. They typically do a liter or two a minute. Very low flow. Looking for discreet interval samples. The flow rate is based on drawdown. The goal is not to draw down the well much more than a half a foot or 1 foot.

Thanks,

Ian Ream
Senior Hydrogeologist
Florence Copper

On Jan 13, 2017, at 8:56 AM, Torren Valdez <tvaldez@azwater.gov> wrote:

> Ian,
>
> Would you happen to know the pump capacity (gpm) for the low-flow pumps that will be installed on those monitoring wells?
>
> Thank you,
>
> Torren Valdez
> Water Planning & Permitting Division
> Arizona Department of Water Resources
> 602.771.8614
>
> <image002.jpg>
>
> ---
>
> **From:** Ian Ream [mailto:IanReam@florencecopper.com]
> **Sent:** Thursday, January 12, 2017 11:13 AM
> **To:** Torren Valdez <tvaldez@azwater.gov>
> **Subject:** Map of monitor well locations
>
> Hi Torren,
>
> Here is a map with the well locations.
>
> Please don't hesitate to contact me if you need anything else or have any questions.
>
> Cheers,
>
> Ian

Ian Ream Senior Hydrogeologist

Florence Copper Inc.
1575 W. Hunt Highway Florence AZ USA 85132
C 520-840-9604 T 520-374-3984 F 520-374-3999
E ianream@florencecopper.com Web florencecopper.com

NOTICE

A.R.S. § 41-1030(B), (D), (E) and (F) provide as follows:

B. An agency shall not base a licensing decision in whole or in part on a licensing requirement or condition that is not specifically authorized by statute, rule or state tribal gaming compact. A general grant of authority in statute does not constitute a basis for imposing a licensing requirement or condition unless a rule is made pursuant to that general grant of authority that specifically authorizes the requirement or condition.

D. This section may be enforced in a private civil action and relief may be awarded against the state. The court may award reasonable attorney fees, damages and all fees associated with the license application to a party that prevails in an action against the state for a violation of this section.

E. A state employee may not intentionally or knowingly violate this section. A violation of this section is cause for disciplinary action or dismissal pursuant to the agency's adopted personnel policy.

F. This section does not abrogate the immunity provided by section 12-820.01 or 12-820.02.

ARIZONA DEPARTMENT of WATER RESOURCES
1110 W. Washington St. Suite 310
Engineering and Permits Division
Phoenix, AZ 85007
602-771-8500

NOTICE TO WELL DRILLERS

This is a reminder that a valid drill card be present for the drilling of each and every well constructed on a site.* The problem seems to occur during the construction of a well when an unexpected problem occurs. Either the hole collapses, the hole is dry, a drill bit is lost and can't be recovered, or any number of other situations where the driller feels that he needs to move over and start another well. If you encounter this type of scenario, please be aware drillers do not have the authority to start another well without first obtaining drilling authority for the new well. Please note the following statutes and regulations pertaining to well drilling and construction:

ARIZONA REVISED STATUTE (A.R.S.)

A.R.S. § 45-592.A.

A person may construct, replace or deepen a well in this state only pursuant to this article and section 45-834.01. The drilling of a well may not begin until all requirements of this article and section 45-834.01, as applicable, are met.

***

A.R.S. § 594.A.

The director shall adopt rules establishing construction standards for new wells and replacement wells, the deepening and abandonment of existing wells and the capping of open wells.

***

A.R.S. § 600.A

A well driller shall maintain a complete and accurate log of each well drilled.

ARIZONA ADMINISTRATIVE CODE (A.A.C.)

A.A.C. R12-15-803.A.

A person shall not drill or abandon a well, or cause a well to be drilled or abandoned, in a manner which is not in compliance with A.R.S. Title 45, Chapter 2, Article 10, and the rules adopted thereunder.

***

A.A.C. R12-15-810.A.

A well drilling contractor or single well licensee may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

***

A.A.C. R12-15-816.F.

In the course of drilling a new well, the well may be abandoned without first filing a notice of intent to abandon and without an abandonment card.

*** THIS REQUIREMENT DOES NOT PERTAIN TO THE DRILLING OF MINERAL EXPLORATION, GEOTECHNICAL OR HEAT PUMP BOREHOLES**

Transaction Receipt - Success

Arizona Water Resources
Arizona Water Resources
MID:347501639533
1700 W Washington St
Phoenix , AZ 85012
602-771-8454

04/19/2017 11:49AM
Remittance ID
Arizona041917144729704Chr
Transaction ID:
183294013

KELSEY SHERRARD
500 Main Street
WOODLAND, California 95695
United States
Visa - 3420
Approval Code: 050257

Sale
Amount: $1,650.00

---

multiple
N/A
Cash receipts
0
dgchristiana@azwater.gov

Cardmember acknowledges receipt of goods and/or services in the amount of the total shown hereon and agrees to perform the obligations set forth by the cardmember's agreement with the issuer.

Signature _____

click here to continue.

Printed: 4/19/2017 12:26:46 PM

Arizona Department of Water Resources

1110 West Washington Street, Suite 310
Phoenix AZ 85007

Customer:
KELSEY SHERRARD
NATIONAL EWP
500 MAIN STREET
WOODLAND, CA 95695

Receipt #: 17-50968
Office: MAIN OFFICE
Receipt Date: 04/19/2017
Sale Type: Mail
Cashier: WRDGC

Item No.	Function Code	AOBJ	Description	Ref ID	Qty	Unit Price	Ext Price
8505	122221	4439-6F	MONITOR, PIEZOMETER, AIR SPARGING, SOIL VAPOR EXTR	multiple wells	11	150.00	1,650.00
					RECEIPT TOTAL:		**1,650.00**

Payment type: CREDIT CARD
Amount Paid: $1,650.00
Payment Received Date: 04/19/2017

Authorization 183294013

Notes:

No refund without valid receipt

APPENDIX B

Lithologic Log

HALEY ALDRICH

LITHOLOGIC LOG

O-02

Project	Production Test Facility, Florence, Arizona	File No. 129687
Client	Florence Copper, Inc.	Sheet No. 1 of 15
Contractor	Cascade Drilling LLC	Cadastral Location D (4-9) 28 CAC

Drilling Method	Conventional Mud Rotary	Land Surface Elevation	1478.90 feet, amsl	Start	22 February 2018
Borehole Diameter(s)	20/12.25 in.	Datum	State Plane NAD 83	Finish	7 March 2018
Rig Make & Model	Challenger 280	Location	N 746,202 E 847,836	H&A Rep.	C. Giusti

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	COMMENTS
0				**UBFU (0-40 feet) UBFU**	
5	1475				**Well Registry ID:** 55-227231 **Surface Completion:** Locking Well Vault & Concrete Pad **Well casing stickup:** 2.08 feet als *COLOR IDENTIFICATION MADE WITH WET SAMPLES USING MUNSELL CHART*
10	1470				
15	1465				
20	1460				
25	1455				
30	1450				
35	1445				
40	1440	SW	40	**WELL GRADED SAND (40-45 feet)** Primarily fine to coarse sand with ~5% fines and ~5% gravel up to 8mm. Sand is subrounded to angular and gravel is subrounded. Fines have no plasticity, no toughness, no dry strength, are brown (7.5YR 5/4), and no reaction to HCL. **UBFU**	**Surface Casing:** 14-inch mild steel; 0 - 40 feet **Well Casing:** Nominal 5-inch diameter Fiberglass Reinforced; -2.08 - 500 feet
45	1435	CH	45	**SANDY FAT CLAY (45-60 feet)** Primarily fines with ~30% sands and ~5% gravel up to 7mm. Sand is subrounded and gravel is subrounded to angular. Fines have medium plasticity, low toughness, high dry strength, are brown (7.5 YR 5/4), and have a moderate reaction to HCL.	
50	1430				
55	1425				
60	1420	SC	60	**CLAYEY SAND (60-80 feet)** Primarily fine to coarse sand with ~30% fines and ~5% gravel up to 10mm. Sand is subrounded to angular and gravel is subrounded. Fines have medium plasticity, low toughness, high dry strength, are brown (7.5YR 5/4), and a moderate reaction to HCL. **UBFU**	**Unit Intervals:** UBFU: 0 - 281 feet MGFU: 281 - 300 feet LBFU: 300 - 430 feet Oxide Bedrock: 430 - 1224 feet
65	1415				
70	1410				
75	1405				

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

O-02

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION
75				
80	1400	SW	80	**WELL GRADED SAND with GRAVEL (80-90feet)** Primarily fine to coarse sand with ~5% fines and ~35% gravel up to 12mm. Sand is subrounded to angular and gravel is subrounded to subangular. Fines have no plasticity, no toughness, no dry strength, are brown (7.5YR 4/4), and no reaction to HCL. **UBFU**
85	1395			
90	1390	SM	90	**SILTY SAND (90-115 feet)** Primarily fine to coarse sand with ~20% fines and ~5% gravel up to 11mm. Sand is subrounded to angular and gravel is subrounded to subangular. Fines have low plasticity, low toughness, low dry strength, are brown (7.5YR 5/4), and a moderate reaction to HCL. **UBFU**
95	1385			
100	1380			
105	1375			
110	1370			
115	1365	SC	115	**CLAYEY SAND (115-130 feet)** Primarily fine to coarse sand with ~30% fines and trace gravel up to 6mm. Sand is subrounded to angular and gravel is subangular. Fines have medium plasticity, low toughness, high dry strength, are brown (7.5YR 5/4), and a moderate reaction to HCL. **LBFU**
120	1360			
125	1355			
130	1350	SP	130	**POORLY GRADED SAND (130-160 feet)** Primarily fine to coarse sand with ~5% fines. Sand is subrounded to angular. Fines have no plasticity, no toughness, no dry strength, are light brown (7.5YR 4/3), and no reaction to HCL. **UBFU**
135	1345			
140	1340			
145	1335			
150	1330			
155	1325			
160	1320	SW-	160	**WELL GRADED SAND with SILT (160-190 feet)** Primarily fine to coarse sand with

Seal: Type V neat cement 0 - 474 feet Fine sand/bentonite 474 - 488 feet

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION
165	1315	SM		~10% fines and ~10% gravel up to 8mm. Sand is subrounded to angular and gravel is subrounded to subangular. Fines have no plasticity, no toughness, low dry strength, are light brown (7.5YR 4/4), and a weak reaction to HCL. **UBFU**
170	1310			
175	1305			
180	1300			
185	1295			
190	1290			
195	1285	SC	190	**CLAYEY SAND (190-215 feet)** Primarily fine to coarse sand with ~20% fines and ~5% gravel up to 12mm. Sand is subrounded to angular and gravel is subangular to subrounded. Fines have high plasticity, low toughness, high dry strength, are brown (7.5YR 5/4), and a moderate reaction to HCL. **LBFU**
200	1280			
205	1275			
210	1270			
215	1265			
220	1260	SP-SM	215	**POORLY GRADED SAND with SILT (215-265 feet)** Primarily coarse to fine sand with ~10% fines and trace gravel up to 5mm. Sand is subrounded to angular and gravel is subrounded. Fines have no plasticity, no toughness, no dry strength, are brown (7.5YR 5/4), and a moderate reaction to HCL. **UBFU**
225	1255			
230	1250			
235	1245			
240	1240			
245	1235		248	

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	
250	1230	SP-SM		**POORLY GRADED SAND with SILT (215-265 feet)** Continued	
255	1225				
260	1220				
265	1215	SP	265	**POORLY GRADED SAND (265-275 feet)** Primarily coarse to fine sand with trace fines and ~10% gravel up to 9mm. Sand is subrounded to angular and gravel is subrounded to subangular. Fines have no plasticity, no toughness, no dry strength, are brown (7.5YR 4/3), and no reaction to HCL. **UBFU**	
270	1210				
275	1205	SP	275	**POORLY GRADED SAND (275-305 feet)** Primarily coarse to fine sand with ~5% fines and trace gravel up to 6mm. Sand is subrounded to angular and gravel is subrounded. Fines have no plasticity, no toughness, no dry strength, are brown (7.5YR 4/4), and a weak reaction to HCL. **UBFU**	**ACD Sensor Depths:** 273, 276 feet
280	1200				
285	1195				
290	1190				
295	1185				
300	1180				
305	1175	SW	305	**WELL GRADED SAND (305-365 feet)** Primarily fine to coarse sand with ~5% fines and ~5% gravel up to 8mm. Sand is subrounded to angular and gravel is subangular to subrounded. Fines have no plasticity, no toughness, no dry strength, are brown (7.5YR 4/4), and a weak reaction to HCL. **UBFU**	
310	1170				
315	1165				
320	1160				
325	1155				
330	1150				
335	1145		335		

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	
340	1140	SW		**WELL GRADED SAND (305-365 feet)** Continued	
345	1135				**CS Sensor Depths:** 389, 409, 430 feet
350	1130				
355	1125				
360	1120				
365	1115		365	**QUARTZ MONZONITE (365-655 feet)** Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%. Cu minerals present at 435ft.	
370	1110				
375	1105				
380	1100				
385	1095				
390	1090				
395	1085				
400	1080				
405	1075				
410	1070				
415	1065				
420	1060		422		

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	
425	1055			**QUARTZ MONZONITE (365-655 feet)** Continued	
430	1050				**Filter Pack:** 8 - 12 CO Silica Sand; 488 - 1224 feet **Thread Adapter:** Stainless Steel, SCH 80 F480 PVC to API; 500 feet
435	1045				
440	1040				
445	1035				
450	1030				
455	1025				
460	1020				
465	1015				
470	1010				
475	1005				
480	1000				
485	995				
490	990				**Well Screen:** Nominal 5-inch diameter, SCH 80 PVC Screen (0.020-inch slots); 500 - 1201 feet **ERT Sensor Depths:** 520, 595, 670, 745, 820, 895, 970, 1045, 1120, 1195 feet
495	985				
500	980				
505	975				
	970				

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION
510			509	**QUARTZ MONZONITE (365-655 feet)** Continued
515	965			
520	960			
525	955			
530	950			
535	945			
540	940			
545	935			
550	930			
555	925			
560	920			
565	915			
570	910			
575	905			
580	900			
585	895			
590	890			
595	885			

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION
			596	**QUARTZ MONZONITE (365-655 feet)** Continued
600	880			
605	875			
610	870			
615	865			
620	860			
625	855			
630	850			
635	845			
640	840			
645	835			
650	830			
655	825		655	**GRANODIORITE (655-670 feet)** Contains mostly plagioclase in a gray aphanitic matrix with biotite crystals composing approximately 10%.
660	820			
665	815			
670	810		670	**DIABASE (670-685 feet)** Dark gray to black igneous rock.
675	805			
680	800			

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION
685	795		685	**GRANODIORITE (685-715 feet)** Contains mostly plagioclase in a gray aphanitic matrix with biotite crystals composing approximately 10%.
690	790			
695	785			
700	780			
705	775			
710	770			
715	765		715	**QUARTZ MONZONITE (715-810 feet)** Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%.
720	760			
725	755			
730	750			
735	745			
740	740			
745	735			
750	730			
755	725			
760	720			
765	715			
	710		769	

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION
770				**QUARTZ MONZONITE (715-810 feet)** Continued
775	705			
780	700			
785	695			
790	690			
795	685			
800	680			
805	675			
810	670		810	**GRANODIORITE (810-830 feet)** Contains mostly plagioclase in a gray aphanitic matrix with biotite crystals composing approximately 10%.
815	665			
820	660			
825	655			
830	650		830	**QUARTZ MONZONITE (830-945 feet)** Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%.
835	645			
840	640			
845	635			
850	630			
855	625		856	

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION
860	620			**QUARTZ MONZONITE (830-945 feet)** Continued
865	615			
870	610			
875	605			
880	600			
885	595			
890	590			
895	585			
900	580			
905	575			
910	570			
915	565			
920	560			
925	555			
930	550			
935	545			
940	540			

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION
945	535		945	**GRANODIORITE (945-1010 feet)** Contains mostly plagioclase in a gray aphanitic matrix with biotite crystals composing approximately 10%.
950	530			
955	525			
960	520			
965	515			
970	510			
975	505			
980	500			
985	495			
990	490			
995	485			
1000	480			
1005	475			
1010	470		1010	**NO SAMPLES (1010-1025 feet)** Samples not collected.
1015	465			
1020	460			
1025	455		1025	**QUARTZ MONZONITE (1025-1080 feet)** Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%.
	450			

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION
1030	445		1030	**QUARTZ MONZONITE (1025-1080 feet)** Continued
1035	440			
1040	435			
1045	430			
1050	425			
1055	420			
1060	415			
1065	410			
1070	405			
1075	400			
1080	395		1080	**GRANODIORITE (1080-1095 feet)** Contains mostly plagioclase in a gray aphanitic matrix with biotite crystals composing approximately 10%.
1085	390			
1090	385			
1095	380		1095	**QUARTZ MONZONITE (1095-1130 feet)** Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%.
1100	375			
1105	370			
1110	365			
1115				

NOTE: Lithologic descrptions, group symbols, and grain-size determinations based on the USCS visual-manual method (Haley & Aldrich OP2001A - Field Practice for Soil Identification and Description).

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION
			1117	**QUARTZ MONZONITE (1095-1130 feet)** Continued
1120	360			
1125	355			
1130	350		1130	**GRANODIORITE (1130-1195 feet)** Contains mostly plagioclase in a gray aphanitic matrix with biotite crystals composing approximately 10%.
1135	345			
1140	340			
1145	335			
1150	330			
1155	325			
1160	320			
1165	315			
1170	310			
1175	305			
1180	300			
1185	295			
1190	290			
1195	285		1195	**QUARTZ MONZONITE (1195-1224 feet)** Consists of quartz at approximately 35%, potassium feldspars at approximately 35%, plagioclase at approximately 25%, and biotite at approximately 5%.
1200	280			

Depth (ft)	Elevation	USCS Symbol	Stratum Change Depth (ft)	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION	
1205	275		1204	**QUARTZ MONZONITE (1195-1224 feet)** Continued	
1210	270				
1215	265				
1220	260				
	255		1224		**Total Borehole Depth:** Driller = 1224 feet; Geophysical Logging = 1212 feet

APPENDIX C

Chemical Characteristics of Formation Water

May 23, 2018

Barbara Sylvester
Brown & Caldwell
201 E. Washington Suite 500
Phoenix, AZ 85004

TEL (602) 567-3894
FAX -

Work Order No.: 18D0619
Order Name: Florence Copper

RE: PTF

Dear Barbara Sylvester,

Turner Laboratories, Inc. received 2 sample(s) on 04/25/2018 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Kevin Brim
Project Manager

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

Order: Florence Copper

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date/Time
18D0619-01	R-09	Ground Water	04/23/2018 1555
18D0619-02	TB	Ground Water	04/25/2018 0000

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

Case Narrative

The 8015D analysis was performed by TestAmerica Laboratories, Inc. in Phoenix, AZ.

The radiochemistry analysis was performed by Radiation Safety Engineering, Inc. in Chandler, AZ.

D5	Minimum Reporting Limit (MRL) is adjusted due to sample dilution; analyte was non-detect in the sample.
H5	This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated LCS/LCSD recovery was acceptable.

All soil, sludge, and solid matrix determinations are reported on a wet weight basis unless otherwise noted.

ND	Not Detected at or above the PQL
PQL	Practical Quantitation Limit
DF	Dilution Factor
PRL	Project Reporting Limit

Turner Laboratories, Inc.

Date: 05/23/2018

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Lab Sample ID: 18D0619-01

Client Sample ID: R-09
Collection Date/Time: 04/23/2018 1555
Matrix: Ground Water
Order Name: Florence Copper

Analyses	Result	PRL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
ICP Dissolved Metals-E 200.7 (4.4)									
Calcium	140		4.0	M3	mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
Iron	ND		0.30		mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
Magnesium	27		3.0		mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
Potassium	6.8		5.0		mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
Sodium	170		5.0	M3	mg/L	1	04/27/2018 1440	05/04/2018 1150	MH
ICP/MS Dissolved Metals-E 200.8 (5.4)									
Aluminum	ND		0.0800	D5	mg/L	2	04/27/2018 1440	05/07/2018 1139	MH
Antimony	ND		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Arsenic	0.0016		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Barium	0.071		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Beryllium	ND		0.00050	D5	mg/L	2	04/27/2018 1440	05/07/2018 1139	MH
Cadmium	ND		0.00025		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Chromium	0.0051		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Cobalt	ND		0.00025		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Copper	0.011		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Lead	ND		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Manganese	0.0020		0.00025		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Nickel	0.0033		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Selenium	ND		0.0025		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Thallium	ND		0.00050		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
Zinc	ND		0.040		mg/L	1	04/27/2018 1440	05/07/2018 1133	MH
CVAA Dissolved Mercury-E 245.1									
Mercury	ND		0.0010		mg/L	1	04/26/2018 0955	04/26/2018 1639	MH
pH-E150.1									
pH (pH Units)	7.8			H5	-	1	04/26/2018 1615	04/26/2018 1616	AP
Temperature (°C)	22			H5	-	1	04/26/2018 1615	04/26/2018 1616	AP
ICP/MS Total Metals-E200.8 (5.4)									
Uranium	0.016		0.00050		mg/L	1	04/27/2018 1230	04/30/2018 1348	MH

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Lab Sample ID: 18D0619-01

Client Sample ID: R-09
Collection Date/Time: 04/23/2018 1555
Matrix: Ground Water
Order Name: Florence Copper

Analyses	Result	PRL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Anions by Ion Chromatography-E300.0 (2.1)									
Chloride	310		25		mg/L	25	04/26/2018 1225	04/26/2018 1415	AP
Fluoride	ND		0.50		mg/L	1	04/25/2018 1208	04/25/2018 1544	AP
Nitrogen, Nitrate (As N)	8.8		0.50		mg/L	1	04/25/2018 1208	04/25/2018 1544	AP
Nitrogen, Nitrite (As N)	ND		0.10		mg/L	1	04/25/2018 1208	04/25/2018 1544	AP
Sulfate	190		130		mg/L	25	04/26/2018 1225	04/26/2018 1415	AP
Cyanide-E335.4									
Cyanide	ND		0.10		mg/L	1	04/26/2018 0845	04/30/2018 1545	AP
Alkalinity-SM2320B									
Alkalinity, Bicarbonate (As CaCO3)	150		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Alkalinity, Carbonate (As CaCO3)	ND		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Alkalinity, Hydroxide (As CaCO3)	ND		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Alkalinity, Phenolphthalein (As CaCO3)	ND		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Alkalinity, Total (As CaCO3)	150		2.0		mg/L	1	05/03/2018 1030	05/03/2018 1210	EJ
Specific Conductance-SM2510 B									
Conductivity	1700		0.20		µmhos/cm	2	05/09/2018 1315	05/09/2018 1330	AP
Total Dissolved Solids (Residue, Filterable)-SM2540 C									
Total Dissolved Solids (Residue, Filterable)	1000		20		mg/L	1	04/26/2018 0826	05/01/2018 1600	EJ
Volatile Organic Compounds by GC/MS-SW8260B									
Benzene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Carbon disulfide	ND		2.0		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Ethylbenzene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Toluene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Xylenes, Total	ND		1.5		ug/L	1	05/07/2018 1824	05/07/2018 1943	KP
Surr: 4-Bromofluorobenzene	*95*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 1943*	*KP*
Surr: Dibromofluoromethane	*101*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 1943*	*KP*
Surr: Toluene-d8	*77*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 1943*	*KP*

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Lab Sample ID: 18D0619-02

Client Sample ID: TB
Collection Date/Time: 04/25/2018 0000
Matrix: Ground Water
Order Name: Florence Copper

Analyses	Result	PRL	PQL	Qual	Units	DF	Prep Date	Analysis Date	Analyst
Volatile Organic Compounds by GC/MS-SW8260B									
Benzene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Carbon disulfide	ND		2.0		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Ethylbenzene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Toluene	ND		0.50		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Xylenes, Total	ND		1.5		ug/L	1	05/07/2018 1824	05/07/2018 2344	KP
Surr: 4-Bromofluorobenzene	*101*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 2344*	*KP*
Surr: Dibromofluoromethane	*110*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 2344*	*KP*
Surr: Toluene-d8	*103*	*70-130*			*%REC*	*1*	*05/07/2018 1824*	*05/07/2018 2344*	*KP*

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1804269 - E 245.1										
Blank (1804269-BLK1)				Prepared & Analyzed: 04/26/2018						
Mercury	ND	0.0010	mg/L							
LCS (1804269-BS1)				Prepared & Analyzed: 04/26/2018						
Mercury	0.0049	0.0010	mg/L	0.005000		98	85-115			
LCS Dup (1804269-BSD1)				Prepared & Analyzed: 04/26/2018						
Mercury	0.0048	0.0010	mg/L	0.005000		95	85-115	2	20	
Matrix Spike (1804269-MS1)		**Source: 18D0394-01**		Prepared & Analyzed: 04/26/2018						
Mercury	0.0050	0.0010	mg/L	0.005000	0.00020	97	85-115			
Matrix Spike Dup (1804269-MSD1)		**Source: 18D0394-01**		Prepared & Analyzed: 04/26/2018						
Mercury	0.0050	0.0010	mg/L	0.005000	0.00020	96	85-115	1	20	
Batch 1804292 - E200.8 (5.4)										
Blank (1804292-BLK1)				Prepared & Analyzed: 04/30/2018						
Uranium	ND	0.00050	mg/L							
LCS (1804292-BS1)				Prepared & Analyzed: 04/30/2018						
Uranium	0.046	0.00050	mg/L	0.05000		92	85-115			
LCS Dup (1804292-BSD1)				Prepared & Analyzed: 04/30/2018						
Uranium	0.046	0.00050	mg/L	0.05000		92	85-115	0.2	20	
Matrix Spike (1804292-MS1)		**Source: 18D0614-01**		Prepared & Analyzed: 04/30/2018						
Uranium	0.051	0.00050	mg/L	0.05000	0.0015	99	70-130			
Batch 1805051 - E 200.7 (4.4)										
Blank (1805051-BLK1)				Prepared & Analyzed: 05/04/2018						
Calcium	ND	4.0	mg/L							
Iron	ND	0.30	mg/L							
Magnesium	ND	3.0	mg/L							
Potassium	ND	5.0	mg/L							
Sodium	ND	5.0	mg/L							
LCS (1805051-BS1)				Prepared & Analyzed: 05/04/2018						
Calcium	11	4.0	mg/L	10.00		109	85-115			
Iron	1.0	0.30	mg/L	1.000		104	85-115			
Magnesium	10	3.0	mg/L	10.00		105	85-115			
Potassium	10	5.0	mg/L	10.00		105	85-115			
Sodium	10	5.0	mg/L	10.00		105	85-115			
LCS Dup (1805051-BSD1)				Prepared & Analyzed: 05/04/2018						
Calcium	11	4.0	mg/L	10.00		110	85-115	1	20	
Iron	1.0	0.30	mg/L	1.000		105	85-115	0.5	20	
Magnesium	10	3.0	mg/L	10.00		105	85-115	0.06	20	
Potassium	10	5.0	mg/L	10.00		105	85-115	0.05	20	
Sodium	11	5.0	mg/L	10.00		109	85-115	4	20	

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1805051 - E 200.7 (4.4)										
Matrix Spike (1805051-MS1)	**Source: 18D0619-01**			Prepared & Analyzed: 05/04/2018						
Calcium	150	4.0	mg/L	10.00	140	59	70-130			M3
Iron	1.1	0.30	mg/L	1.000	0.028	105	70-130			
Magnesium	38	3.0	mg/L	10.00	27	108	70-130			
Potassium	17	5.0	mg/L	10.00	6.8	105	70-130			
Sodium	170	5.0	mg/L	10.00	170	30	70-130			M3
Matrix Spike (1805051-MS2)	**Source: 18E0021-01**			Prepared & Analyzed: 05/04/2018						
Calcium	64	4.0	mg/L	10.00	54	103	70-130			
Iron	1.0	0.30	mg/L	1.000	0.0060	101	70-130			
Magnesium	21	3.0	mg/L	10.00	11	99	70-130			
Potassium	15	5.0	mg/L	10.00	4.7	104	70-130			
Sodium	99	5.0	mg/L	10.00	90	87	70-130			
Batch 1805069 - E 200.8 (5.4)										
Blank (1805069-BLK1)				Prepared & Analyzed: 05/07/2018						
Aluminum	ND	0.0400	mg/L							
Antimony	ND	0.00050	mg/L							
Arsenic	ND	0.00050	mg/L							
Barium	ND	0.00050	mg/L							
Beryllium	ND	0.00025	mg/L							
Cadmium	ND	0.00025	mg/L							
Chromium	ND	0.00050	mg/L							
Cobalt	ND	0.00025	mg/L							
Copper	ND	0.00050	mg/L							
Lead	ND	0.00050	mg/L							
Manganese	ND	0.00025	mg/L							
Nickel	ND	0.00050	mg/L							
Selenium	ND	0.0025	mg/L							
Thallium	ND	0.00050	mg/L							
Zinc	ND	0.040	mg/L							
LCS (1805069-BS1)				Prepared & Analyzed: 05/07/2018						
Aluminum	0.104	0.0400	mg/L	0.1000		104	85-115			
Antimony	0.048	0.00050	mg/L	0.05000		96	85-115			
Arsenic	0.050	0.00050	mg/L	0.05000		100	85-115			
Barium	0.050	0.00050	mg/L	0.05000		100	85-115			
Beryllium	0.049	0.00025	mg/L	0.05000		97	85-115			
Cadmium	0.050	0.00025	mg/L	0.05000		100	85-115			
Chromium	0.051	0.00050	mg/L	0.05000		102	85-115			
Cobalt	0.051	0.00025	mg/L	0.05000		101	85-115			
Copper	0.051	0.00050	mg/L	0.05000		103	85-115			
Lead	0.049	0.00050	mg/L	0.05000		98	85-115			
Manganese	0.050	0.00025	mg/L	0.05000		101	85-115			
Nickel	0.051	0.00050	mg/L	0.05000		102	85-115			
Selenium	0.051	0.0025	mg/L	0.05000		103	85-115			
Thallium	0.050	0.00050	mg/L	0.05000		101	85-115			
Zinc	0.10	0.040	mg/L	0.1000		101	85-115			

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1805069 - E 200.8 (5.4)										
LCS Dup (1805069-BSD1)				Prepared & Analyzed: 05/07/2018						
Aluminum	0.115	0.0400	mg/L	0.1000		115	85-115	10	20	
Antimony	0.048	0.00050	mg/L	0.05000		96	85-115	0.7	20	
Arsenic	0.050	0.00050	mg/L	0.05000		101	85-115	0.8	20	
Barium	0.051	0.00050	mg/L	0.05000		102	85-115	1	20	
Beryllium	0.049	0.00025	mg/L	0.05000		97	85-115	0.2	20	
Cadmium	0.050	0.00025	mg/L	0.05000		100	85-115	0.2	20	
Chromium	0.051	0.00050	mg/L	0.05000		102	85-115	0.4	20	
Cobalt	0.050	0.00025	mg/L	0.05000		101	85-115	0.5	20	
Copper	0.052	0.00050	mg/L	0.05000		105	85-115	2	20	
Lead	0.049	0.00050	mg/L	0.05000		98	85-115	0.1	20	
Manganese	0.050	0.00025	mg/L	0.05000		101	85-115	0.09	20	
Nickel	0.051	0.00050	mg/L	0.05000		103	85-115	0.8	20	
Selenium	0.052	0.0025	mg/L	0.05000		104	85-115	2	20	
Thallium	0.050	0.00050	mg/L	0.05000		101	85-115	0.06	20	
Zinc	0.10	0.040	mg/L	0.1000		104	85-115	3	20	
Matrix Spike (1805069-MS1)		**Source: 18D0693-01**		Prepared & Analyzed: 05/07/2018						
Aluminum	0.239	0.0400	mg/L	0.1000	0.166	74	70-130			
Antimony	0.045	0.00050	mg/L	0.05000	0.00024	90	70-130			
Arsenic	0.056	0.00050	mg/L	0.05000	0.0035	104	70-130			
Barium	0.16	0.00050	mg/L	0.05000	0.12	94	70-130			
Beryllium	0.045	0.00025	mg/L	0.05000	0.000029	90	70-130			
Cadmium	0.047	0.00025	mg/L	0.05000	ND	94	70-130			
Chromium	0.049	0.00050	mg/L	0.05000	0.00052	98	70-130			
Cobalt	0.048	0.00025	mg/L	0.05000	0.00097	95	70-130			
Copper	0.051	0.00050	mg/L	0.05000	0.0020	98	70-130			
Lead	0.047	0.00050	mg/L	0.05000	0.00016	94	70-130			
Manganese	0.054	0.00025	mg/L	0.05000	0.0075	94	70-130			
Nickel	0.049	0.00050	mg/L	0.05000	0.0018	94	70-130			
Selenium	0.057	0.0025	mg/L	0.05000	ND	114	70-130			
Thallium	0.048	0.00050	mg/L	0.05000	0.000038	96	70-130			
Zinc	0.11	0.040	mg/L	0.1000	ND	109	70-130			

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1804261 - SM2540 C										
Duplicate (1804261-DUP1)		**Source: 18D0606-01**		Prepared: 04/26/2018 Analyzed: 04/27/2018						
Total Dissolved Solids (Residue, Filterable)	630	20	mg/L		630			0.3	5	
Duplicate (1804261-DUP2)		**Source: 18D0606-02**		Prepared: 04/26/2018 Analyzed: 04/27/2018						
Total Dissolved Solids (Residue, Filterable)	610	20	mg/L		620			0.8	5	
Batch 1804268 - E335.4										
Blank (1804268-BLK1)				Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	ND	0.10	mg/L							
LCS (1804268-BS1)				Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	2.0	0.10	mg/L	2.000		101	90-110			
LCS Dup (1804268-BSD1)				Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	2.0	0.10	mg/L	2.000		101	90-110	0.1	20	
Matrix Spike (1804268-MS1)		**Source: 18D0602-03**		Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	2.1	0.10	mg/L	2.000	ND	103	90-110			
Matrix Spike Dup (1804268-MSD1)		**Source: 18D0602-03**		Prepared: 04/26/2018 Analyzed: 04/30/2018						
Cyanide	2.0	0.10	mg/L	2.000	ND	98	90-110	5	20	
Batch 1804272 - E150.1										
Duplicate (1804272-DUP1)		**Source: 18D0662-02**		Prepared & Analyzed: 04/26/2018						
pH (pH Units)	7.8		-		7.8			0.1	200	H5
Temperature (°C)	21		-		21			2	200	H5
Batch 1805027 - SM2320B										
LCS (1805027-BS1)				Prepared & Analyzed: 05/03/2018						
Alkalinity, Total (As CaCO3)	240	2.0	mg/L	250.0		96	90-110			
LCS Dup (1805027-BSD1)				Prepared & Analyzed: 05/03/2018						
Alkalinity, Total (As CaCO3)	240	2.0	mg/L	250.0		96	90-110	0	10	
Matrix Spike (1805027-MS1)		**Source: 18D0606-02**		Prepared & Analyzed: 05/03/2018						
Alkalinity, Total (As CaCO3)	370	2.0	mg/L	250.0	130	96	85-115			
Matrix Spike Dup (1805027-MSD1)		**Source: 18D0606-02**		Prepared & Analyzed: 05/03/2018						
Alkalinity, Total (As CaCO3)	370	2.0	mg/L	250.0	130	95	85-115	0.5	10	
Batch 1805103 - SM2510 B										
LCS (1805103-BS1)				Prepared & Analyzed: 05/09/2018						
Conductivity	140	0.10	µmhos/cm	141.2		101	0-200			
LCS Dup (1805103-BSD1)				Prepared & Analyzed: 05/09/2018						
Conductivity	140	0.10	µmhos/cm	141.2		101	0-200	0.7	200	
Duplicate (1805103-DUP1)		**Source: 18E0192-01**		Prepared & Analyzed: 05/09/2018						
Conductivity	4.0	0.10	µmhos/cm		4.0			0	10	

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1805074 - SW8260B										
Blank (1805074-BLK1)				Prepared & Analyzed: 05/07/2018						
Benzene	ND	0.50	ug/L							
Carbon disulfide	ND	2.0	ug/L							
Ethylbenzene	ND	0.50	ug/L							
Toluene	ND	0.50	ug/L							
Xylenes, Total	ND	1.5	ug/L							
Surrogate: 4-Bromofluorobenzene	*25.0*		*ug/L*	*25.00*		*100*	*70-130*			
Surrogate: Dibromofluoromethane	*26.9*		*ug/L*	*25.00*		*107*	*70-130*			
Surrogate: Toluene-d8	*25.1*		*ug/L*	*25.00*		*100*	*70-130*			
LCS (1805074-BS1)				Prepared & Analyzed: 05/07/2018						
1,1-Dichloroethene	29		ug/L	25.00		114	70-130			
Benzene	27		ug/L	25.00		109	70-130			
Chlorobenzene	29		ug/L	25.00		115	70-130			
Toluene	25		ug/L	25.00		101	70-130			
Trichloroethene	26		ug/L	25.00		103	70-130			
Surrogate: 4-Bromofluorobenzene	*24.6*		*ug/L*	*25.00*		*98*	*70-130*			
Surrogate: Dibromofluoromethane	*25.6*		*ug/L*	*25.00*		*102*	*70-130*			
Surrogate: Toluene-d8	*24.8*		*ug/L*	*25.00*		*99*	*70-130*			
LCS Dup (1805074-BSD1)				Prepared & Analyzed: 05/07/2018						
1,1-Dichloroethene	27		ug/L	25.00		110	70-130	4	30	
Benzene	26		ug/L	25.00		104	70-130	5	30	
Chlorobenzene	26		ug/L	25.00		105	70-130	9	30	
Toluene	24		ug/L	25.00		96	70-130	5	30	
Trichloroethene	25		ug/L	25.00		98	70-130	4	30	
Surrogate: 4-Bromofluorobenzene	*24.4*		*ug/L*	*25.00*		*98*	*70-130*			
Surrogate: Dibromofluoromethane	*26.1*		*ug/L*	*25.00*		*104*	*70-130*			
Surrogate: Toluene-d8	*25.1*		*ug/L*	*25.00*		*100*	*70-130*			
Matrix Spike (1805074-MS1)	**Source: 18D0582-02**			Prepared & Analyzed: 05/07/2018						
1,1-Dichloroethene	27		ug/L	25.00	0.070	109	70-130			
Benzene	26		ug/L	25.00	0.020	104	70-130			
Chlorobenzene	26		ug/L	25.00	0.0	105	70-130			
Toluene	27		ug/L	25.00	3.5	95	70-130			
Trichloroethene	24		ug/L	25.00	0.040	97	70-130			
Surrogate: 4-Bromofluorobenzene	*24.4*		*ug/L*	*25.00*		*98*	*70-130*			
Surrogate: Dibromofluoromethane	*26.4*		*ug/L*	*25.00*		*106*	*70-130*			
Surrogate: Toluene-d8	*24.9*		*ug/L*	*25.00*		*100*	*70-130*			
Matrix Spike Dup (1805074-MSD1)	**Source: 18D0582-02**			Prepared & Analyzed: 05/07/2018						
1,1-Dichloroethene	27		ug/L	25.00	0.070	108	70-130	0.8	30	
Benzene	25		ug/L	25.00	0.020	101	70-130	2	30	
Chlorobenzene	26		ug/L	25.00	0.0	105	70-130	0.3	30	
Toluene	27		ug/L	25.00	3.5	95	70-130	0.1	30	
Trichloroethene	24		ug/L	25.00	0.040	95	70-130	2	30	
Surrogate: 4-Bromofluorobenzene	*24.7*		*ug/L*	*25.00*		*99*	*70-130*			
Surrogate: Dibromofluoromethane	*26.4*		*ug/L*	*25.00*		*106*	*70-130*			
Surrogate: Toluene-d8	*25.3*		*ug/L*	*25.00*		*101*	*70-130*			

Client: Brown & Caldwell
Project: PTF
Work Order: 18D0619
Date Received: 04/25/2018

QC Summary

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 1804245 - E300.0 (2.1)										
Blank (1804245-BLK1)				Prepared & Analyzed: 04/25/2018						
Chloride	ND	1.0	mg/L							
Fluoride	ND	0.50	mg/L							
Nitrogen, Nitrate (As N)	ND	0.50	mg/L							
Nitrogen, Nitrite (As N)	ND	0.10	mg/L							
Sulfate	ND	5.0	mg/L							
LCS (1804245-BS1)				Prepared & Analyzed: 04/25/2018						
Chloride	12	1.0	mg/L	12.50		92	90-110			
Fluoride	2.0	0.50	mg/L	2.000		101	90-110			
Nitrogen, Nitrate (As N)	4.7	0.50	mg/L	5.000		95	90-110			
Nitrogen, Nitrite (As N)	2.3	0.10	mg/L	2.500		92	90-110			
Sulfate	12	5.0	mg/L	12.50		96	90-110			
LCS Dup (1804245-BSD1)				Prepared & Analyzed: 04/25/2018						
Chloride	12	1.0	mg/L	12.50		94	90-110	2	10	
Fluoride	2.0	0.50	mg/L	2.000		101	90-110	0.4	10	
Nitrogen, Nitrate (As N)	4.9	0.50	mg/L	5.000		98	90-110	3	10	
Nitrogen, Nitrite (As N)	2.4	0.10	mg/L	2.500		95	90-110	3	10	
Sulfate	12	5.0	mg/L	12.50		98	90-110	3	10	
Matrix Spike (1804245-MS1)		**Source: 18D0613-08**		Prepared & Analyzed: 04/25/2018						
Fluoride	3.7	0.50	mg/L	2.000	1.7	100	80-120			
Nitrogen, Nitrate (As N)	4.7	0.50	mg/L	5.000	0.22	89	80-120			
Matrix Spike (1804245-MS2)		**Source: 18D0625-01**		Prepared & Analyzed: 04/26/2018						
Nitrogen, Nitrate (As N)	5.0	0.50	mg/L	5.000	0.46	92	80-120			
Nitrogen, Nitrite (As N)	2.2	0.10	mg/L	2.500	ND	88	80-120			
Matrix Spike (1804245-MS3)		**Source: 18D0614-01RE1**		Prepared & Analyzed: 04/26/2018						
Chloride	17		mg/L	12.50	6.4	88	80-120			
Sulfate	28		mg/L	12.50	18	85	80-120			
Matrix Spike Dup (1804245-MSD1)		**Source: 18D0613-08**		Prepared & Analyzed: 04/25/2018						
Fluoride	3.7	0.50	mg/L	2.000	1.7	100	80-120	0.4	10	
Nitrogen, Nitrate (As N)	4.7	0.50	mg/L	5.000	0.22	90	80-120	0.6	10	
Matrix Spike Dup (1804245-MSD2)		**Source: 18D0625-01**		Prepared & Analyzed: 04/26/2018						
Nitrogen, Nitrate (As N)	5.1	0.50	mg/L	5.000	0.46	92	80-120	0.2	10	
Nitrogen, Nitrite (As N)	2.2	0.10	mg/L	2.500	ND	88	80-120	0.4	10	
Matrix Spike Dup (1804245-MSD3)		**Source: 18D0614-01RE1**		Prepared & Analyzed: 04/26/2018						
Chloride	18		mg/L	12.50	6.4	89	80-120	0.6	10	
Sulfate	29		mg/L	12.50	18	86	80-120	0.6	10	

TURNER LABORATORIES INC.
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
www.turnerlabs.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 18D0619 DATE 4/23/18 PAGE 1 OF 1

PROJECT NAME Florence Copper # _____

CONTACT NAME : Barb Sylvester

COMPANY NAME : Brown and Caldwell

ADDRESS : 2 N Central Ave, Suite 1600

CITY Phoenix STATE AZ ZIP CODE 85004

PHONE 602-567-3894 FAX

SAMPLER'S SIGNATURE

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	Diss Metals - list (Field Filtered)	Total Uranium (not Filtered)	Inorganics - list	Cyanide (free)	Organics - list	G.Alpha, (RadSafety sub)	Uranium activity if G. Alpha >12	Ra226, 228, Ra-Tot (RadsSafety)	TPH-D (TestAmerica Sub)
R-09	4-23-18	1555		GW	10	X	X	X	X	X	X	X	X	X
8260 TB	4-23-18	1600		GW	1					X				
				GW										
				GW										
				GW										
				GW										
				GW										
				GW										
				GW										
				GW										
				GW										
				GW										

1. RELINQUISHED BY:
Signature
Printed Name Caleb Caiosh
Firm HA
Date/Time 4-23-18 1630

2. RECEIVED BY: UPS
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS:
X Standard (approx10 days)*
___Next day ___2 Day ___5 Day*
___ Email Preliminary Results To:
* Working Days

REPORT REQUIREMENTS:
X I. Routine Report
___ II. Report (includes DUP,MS,MSD, as required, may be charged as samples)
___ III. Date Validation Report (Includes All Raw Data)
Add 10% to invoice

INVOICE INFORMATION:
Account X Y ___ N
P.O. # _____
Bill to: Florence Copper

SAMPLE RECEIPT:
Total Containers _____
Temperature 2.2
☑ Wet Ice ☐ Blue Ice

3. RELINQUISHED BY: UPS
Signature
Printed Name
Firm
Date/Time

4. RECEIVED BY:
Signature Joseph Catalano
Printed Name
Firm TURNER LABORATORIES INC.
4/23/18 1006
Date/Time

*LEGEND
DW = DRINKING WATER
GW = GROUNDWATER
SD = SOLID
SG = SLUDGE
SL = SOIL
ST = STORMWATER
WW = WASTEWATER

SPECIAL INSTRUCTIONS/COMMENTS:

Compliance Analysis: ☐ Yes ☐ No	Custody Seals ☐	Preservation Confirmation ☒
ADEQ Forms: ☐ Yes ☐ No	Container Intact ☒	Appropriate Head Space ☐
Mail ADEQ Forms: ☐ Yes ☐ No	COC/Labels Agree ☐	Received Within Hold Time ☒

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Phoenix
4625 East Cotton Ctr Blvd
Suite 189
Phoenix, AZ 85040
Tel: (602)437-3340

TestAmerica Job ID: 550-101943-1
Client Project/Site: 18D0619

For:
Turner Laboratories, Inc.
2445 North Coyote Drive
Suite 104
Tucson, Arizona 85745

Attn: Kevin Brim

Authorized for release by:
5/16/2018 12:23:25 PM

Ken Baker, Project Manager II
(602)659-7624
ken.baker@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
Q9	Insufficient sample received to meet method QC requirements.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Job ID: 550-101943-1

Laboratory: TestAmerica Phoenix

Narrative

Job Narrative
550-101943-1

Comments
No additional comments.

Receipt
The sample was received on 4/27/2018 10:50 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8º C.

GC Semi VOA
Method(s) 8015D: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD) associated with preparation batch 550-145985 and analytical batch 550-146884. Affected samples have been added a Q9 qualifier. 18D0619-01 (550-101943-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
Method(s) 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 3510C.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
550-101943-1	18D0619-01	Water	04/23/18 15:55	04/27/18 10:50

Detection Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Client Sample ID: 18D0619-01

Lab Sample ID: 550-101943-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
ORO (C22-C32)	0.21	Q9	0.20		mg/L	1		8015D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Client Sample ID: 18D0619-01
Date Collected: 04/23/18 15:55
Date Received: 04/27/18 10:50

Lab Sample ID: 550-101943-1
Matrix: Water

Method: 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
ORO (C22-C32)	0.21	Q9	0.20		mg/L		04/30/18 14:16	05/10/18 23:29	1
DRO (C10-C22)	ND	Q9	0.10		mg/L		04/30/18 14:16	05/10/18 23:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*79*		*10 - 150*	*04/30/18 14:16*	*05/10/18 23:29*	*1*

Surrogate Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Method: 8015D - Diesel Range Organics (DRO) (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	OTPH (10-150)							
550-101943-1	18D0619-01	79							
LCS 550-145985/2-A	Lab Control Sample	79							
LCSD 550-145985/3-A	Lab Control Sample Dup	79							
MB 550-145985/1-A	Method Blank	65							

Surrogate Legend

OTPH = o-Terphenyl (Surr)

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 550-145985/1-A
Matrix: Water
Analysis Batch: 146884

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 145985

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
ORO (C22-C32)	ND		0.20		mg/L		04/30/18 14:15	05/11/18 11:16	1
DRO (C10-C22)	ND		0.10		mg/L		04/30/18 14:15	05/11/18 11:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*65*		*10 - 150*	*04/30/18 14:15*	*05/11/18 11:16*	*1*

Lab Sample ID: LCS 550-145985/2-A
Matrix: Water
Analysis Batch: 146884

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 145985

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
ORO (C22-C32)			1.60	1.59		mg/L		99	69 - 107		
DRO (C10-C22)			0.400	0.450		mg/L		113	42 - 133		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl (Surr)	*79*		*10 - 150*

Lab Sample ID: LCSD 550-145985/3-A
Matrix: Water
Analysis Batch: 146884

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 145985

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
ORO (C22-C32)			1.60	1.59		mg/L		100	69 - 107	0	20
DRO (C10-C22)			0.400	0.447		mg/L		112	42 - 133	1	22

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl (Surr)	*79*		*10 - 150*

QC Association Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

GC Semi VOA

Prep Batch: 145985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-101943-1	18D0619-01	Total/NA	Water	3510C	
MB 550-145985/1-A	Method Blank	Total/NA	Water	3510C	
LCS 550-145985/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 550-145985/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 146884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
550-101943-1	18D0619-01	Total/NA	Water	8015D	145985
MB 550-145985/1-A	Method Blank	Total/NA	Water	8015D	145985
LCS 550-145985/2-A	Lab Control Sample	Total/NA	Water	8015D	145985
LCSD 550-145985/3-A	Lab Control Sample Dup	Total/NA	Water	8015D	145985

Lab Chronicle

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Client Sample ID: 18D0619-01
Date Collected: 04/23/18 15:55
Date Received: 04/27/18 10:50

Lab Sample ID: 550-101943-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			145985	04/30/18 14:16	REM	TAL PHX
Total/NA	Analysis	8015D		1	146884	05/10/18 23:29	TC1	TAL PHX

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

Accreditation/Certification Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Laboratory: TestAmerica Phoenix

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Arizona	State Program	9	AZ0728	06-09-18

Analysis Method	Prep Method	Matrix	Analyte

Method Summary

Client: Turner Laboratories, Inc.
Project/Site: 18D0619

TestAmerica Job ID: 550-101943-1

Method	Method Description	Protocol	Laboratory
8015D	Diesel Range Organics (DRO) (GC)	SW846	TAL PHX
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL PHX

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PHX = TestAmerica Phoenix, 4625 East Cotton Ctr Blvd, Suite 189, Phoenix, AZ 85040, TEL (602)437-3340

SUBCONTRACT ORDER

Turner Laboratories, Inc.

101943

18D0619

SENDING LABORATORY:	RECEIVING LABORATORY:
Turner Laboratories, Inc.	TestAmerica Phoenix
2445 N. Coyote Drive, Ste #104	4625 East Cotton Center Boulevard Suite 189
Tucson, AZ 85745	Phoenix, AZ 85540
Phone: 520.882.5880	Phone :(602) 437-3340
Fax: 520.882.9788	Fax:
Project Manager: Kevin Brim	Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
-01			
Sample ID: 18D0619-01 Drinking Water	**Sampled:04/23/2018 15:55**		
8015D Sub	04/30/2018 15:55		8015D DRO and ORO Paramaters Only
Containers Supplied:			

8015D Sub
o-Terphenyl
C10-C32 (Total)
C22-C32 (Oil Range Organics)
C10-C22 (Diesel Range Organics)
C6-C10 (Gasoline Range Organics)

550-101943 Chain of Custody

3,8°C UPS GR

TA-PHX

Released By	Date	Received By	Date
	4/24/18		4-27-18 1050
Released By	Date	Received By	Date

Login Sample Receipt Checklist

Client: Turner Laboratories, Inc.

Job Number: 550-101943-1

Login Number: 101943
List Number: 1
Creator: Gravlin, Andrea

List Source: TestAmerica Phoenix

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	False	Check done at department level as required.

Radiation Safety Engineering, Inc.
3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121 (480) 897-9459
Website: www.radsafe.com FAX (480) 892-5446

Radiochemical Activity in Water (pCi/L)

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: April 23, 2018
Sample Received: May 01, 2018
Analysis Completed: May 22, 2018

Sample ID	Gross Alpha Activity Method 600/00-02 (pCi/L)	Uranium Activity Method ASTM D6239 (pCi/L)	Adjusted Gross Alpha (pCi/L)	Radium 226 Activity Method GammaRay HPGE (pCi/L)	Radium 228 Activity Method GammaRay HPGE (pCi/L)	Total Radium (pCi/L)
18D0619-01	17.7 ± 0.9	12.9 ± 1.2	4.8 ± 1.5	3.1 ± 0.3	3.1 ± 0.4	6.2 ± 0.5
Date of Analysis	5/2/2018	5/21/2018	5/21/2018	5/4/2018	5/4/2018	5/4/2018

Robert L. Metzger, Ph.D., C.H.P. 5/22/2018
Laboratory License Number AZ0462 Date

Radiation Safety Engineering, Inc.
3245 N. WASHINGTON ST. • CHANDLER, ARIZONA 85225-1121 (480) 897-9459
Website: www.radsafe.com FAX (480) 892-5446

Isotopic Uranium Analysis

Turner Laboratories
2445 N. Coyote Drive, Ste. 104
Tucson, AZ 85745

Sampling Date: April 23, 2018
Sample Received: May 01, 2018
Uranium Analysis Date: May 21, 2018

Sample No.	^{238}U	^{235}U	^{234}U	Total	
18D0619-01	6.0 ± 0.6	0.280 ± 0.004	6.6 ± 0.6	12.9 ± 1.2	Activity (pCi/L)
	17.9 ± 1.7	0.131 ± 0.002	0.00106 ± 0.00010	18.0 ± 1.7	Content (µg/L)
	Comments:				

Robert L. Metzger, Ph.D., C.H.P. 5/22/2018
Date

Laboratory License Number AZ0462

Arizona Department of Environmental Quality

Drinking Water Radionuclides-Adjusted Gross Alpha, Radium 226 & 228, Uranium Analysis Report

Samples To Be Taken At Entry Point Into Distribution System (EPDS) Only

PWS ID#: AZ04 _____ PWS Name: _____

April 23, 2018 (Sample Date) 15:55 (Sample Time) (24 hour clock) _____ (Owner/Contact Person)

_____ (Owner/Contact Fax Number) _____ (Owner/Contact Phone Number)

Sample Collection Point

☐ EPDS # _____

Compliance Sample Type:

☐ Reduced Monitoring — Date Q1 collected: _____

☐ Quarterly — Date Q2 collected: _____

☐ Composite of four quarterly samples — Date Q3 collected: _____

Date Q4 collected: _____

*****RADIOCHEMICAL ANALYSIS*****

>>>To be filled out by laboratory personnel<<<

*****Combined Uranium must be reported in micrograms per liter*****

Analysis Method	MCL	Reporting Limit	Contaminant Name	Cont. Code	Analyses Run Date	Result		Exceed MCL
	15 pCi/L		Adjusted Gross Alpha	4000	5/21/2018	4.8 ± 1.5		
600/00-02		3 pCi/L	Gross Alpha	4002	5/2/2018	17.7 ± 0.9		
7500 - Rn			Radon	4004				
ASTM D6239	30 µg/L	1 µg/L	Combined Uranium	4006	5/21/2018	18.0 ± 1.7	µg/L	
			Uranium 234	4007	5/21/2018	0.00106 ± 0.00010		
			Uranium 235	4008	5/21/2018	0.131 ± 0.002		
			Uranium 238	4009	5/21/2018	17.9 ± 1.7		
	5 pCi/L	1 pCi/L	Combined Radium (226,228)	4010	5/4/2018	6.2 ± 0.5		X
GammaRay HPGE		1 pCi/L	Radium 226	4020	5/4/2018	3.1 ± 0.3		
GammaRay HPGE		1 pCi/L	Radium 228	4030	5/4/2018	3.1 ± 0.4		

*****LABORATORY INFORMATION*****

>>>To be filled out by laboratory personnel<<<

Specimen Number: RSE60312

Lab ID Number: AZ0462

Lab Name: Radiation Safety Engineering, Inc.

Printed Name and Phone Number of Laboratory Contact: Robert L. Metzger, Ph.D., C.H.P. (480) 897-9459

Comments: 18D0619-01

Authorized Signature: Robt L. Metzger

Date Public Water System Notified: _____

DWAR 6: 11/2007

SUBCONTRACT ORDER

Turner Laboratories, Inc.

18D0619

SENDING LABORATORY:

Turner Laboratories, Inc.
2445 N. Coyote Drive, Ste #104
Tucson, AZ 85745
Phone: 520.882.5880
Fax: 520.882.9788
Project Manager: Kevin Brim

RECEIVING LABORATORY:

Radiation Safety Engineering, Inc.
3245 N. Washington St.
Chandler, AZ 85225-1121
Phone :(480) 897-9459
Fax: (480) 892-5446
Please CC Kevin Brim Kbrim@turnerlabs.com

Analysis	Expires	Laboratory ID	Comments
Sample ID: 18D0619-01 Drinking Water Sampled:04/23/2018 15:55			
Radiochemistry, Gross Alpha	10/20/2018 15:55		Analyze Uranium and Adjusted Alpha if G. Alpha is > 12
Radiochemistry, Radium 226/228	05/23/2018 15:55		
Containers Supplied:			

H 60312

Released By	Date	Received By	Date
[signature]	4/30/18 16:00	UPS	4/30/18 16:00
Released By	Date	Received By	Date

APPENDIX D

Well Completion Documentation

PIPE TALLY

Project Name.: FC1	Project No.: 129687-009
Well No.: G-02	Date: 3-6-18
Location:	Pipe Talley for: WELL INSTAL
Total Depth: 1220	Geologist: C.GIUFFRE

Type of Connections: ☐ Welded ☐ T+C ☐ Flush Thread ☐ Other

Pipe	✓	Length (ft)	Length Σ (ft)	Pipe Type	Dist. from sensor bottom to bottom of pipe (feet)	Sensor Type (ACD, CS, ERT)	Sensor ID	Wire Lead ID	Depth of Sensor (feet bgs)
1	✓	0.36	0.36	316 SS END CAP					
2	✓	20.01	20.37	6.020 PVC Sch 80 5.54		ERT	10	10	1195
3	✱	19.99	40.36						
4	✓	19.99	60.35						
5	✱	19.99	80.34						
6	✓	19.99	100.33		0.66	ERT	9	9	
7	✱	20.00	120.33						
8	✓	20.00	140.33						
9	✱	19.99	160.32		15.65	ERT	8	8	
10	✓	19.99	180.31						
11	✱	19.98	200.29						
12	✓	19.99	220.28						
13	✱	19.99	240.27		10.74	ERT	7	7	
14	✓	19.99	260.26						
15	✱	19.98	280.24						
16	✓	20.00	300.24						
17	✱	20.01	320.25		5.72	ERT	6	6	
18	✓	20.01	340.26						
19	✱	20.01	360.27						
20	✓	20.00	380.27						
21	✱	20.01	400.28		0.89	ERT	5	5	
22	✓	20.01	420.29						
23	✱	20.02	440.31						
24	✓	20.00	460.31		16.04	ERT	4	4	
25	✱	20.00	480.31						
26	✓	20.00	500.31						
27	✱	20.00	520.31						
28	✓	20.00	540.31		11.06	ERT	3	3	
29	✱	20.00	560.31						
30	✓	20.01	580.32						

Notes:

SCREEN: SCH 80 PVC 5.56" OD, 4.77" ID
0.20 SLOT
CASING = FRP, 5.44" OD, 4.74" ID
6.54" OD ON COUPLERS
END CAP = 316 STAINLESS STEEL

✱ = 316 STAINLESS STEEL CENTRALIZERS
ON 40 FT SPACING, DISTRIBUTION VARIES
SLIGHTLY TO AVOID PROXIMITY OF SENSORS

SUMMARY OF TALLY

Total Length tallied:	
Casing Stick-Up:	1 ft (TOP OF FLANGE)
Length of Casing Cut-Off:	
Bottom of Well:	
Screened Interval:	
Total Screen in Hole:	700.71

Sensor Types:
- Annular Conductivity Device (ACD), installed as pairs with 3 ft spacing
- Conductivity Sensor (CS) 4 sensors with sing lead 20 ft spacing
- Electrical Resistivity Tomography (ERT) 10 SENSORS 75 FT SPACING

HALEY ALDRICH

HALEY ALDRICH

PIPE TALLY

Project Name.:	FCI	Project No.:	129687-002
Well No.:	O-02	Date:	3-6-18
Location:		Pipe Talley for:	WELL INSTAL
Total Depth:	1220	Geologist:	CGRIST

Type of Connections: ☐ Welded ☐ T+C ☐ Flush Thread ☐ Other

Pipe	✓	Length (ft)	Length Σ (ft)	Pipe Type	Dist. from sensor bottom to bottom of pipe (feet)	Sensor Type (ACD, CS, ERT)	Sensor ID	Wire Lead ID	Depth of Sensor (feet bgs)
31	✓	20.00	606.32	0.020 PVC					
32	✓	19.99	626.31	|	6.16	ERT	2	2	
33	✓	20.00	646.31	|					
34	✓	20.00	666.31	|					
35	✓	20.00	686.31	|					
36	✓	20.00	706.31	↓	1.15	ERT	1	1	
37	✓	0.50	706.81	PVC/FRP TRANSITION					
38	✓	28.89	729.76	FRP					
39	✓	28.88	758.58	|	21.20	CS	4	4	
40	✓	28.88	787.46	|	12.63	CS	3	3	
41	✓	28.93	816.39	|	4.97/25.11	CS	2 | 1	2 | 1	
42	✓	29.03	845.42	|					
43	✓	29.03	874.45	|					
44	✓	29.02	903.47	|					
45	✓	29.03	932.5	|	21.43/24.43	ACD	2 | 1	2 | 1	
46	✓	29.07	961.57	|					
47	✓	28.98	990.55	|					
48	✓	29.07	1019.62	|					
49	✓	28.94	1048.56	|					
50	✓	28.96	1077.52	|					
51	✓	28.96	1106.48	|					
52	✓	28.73	1135.21	|					
53	✓	28.80	1164.01	|					
54	✓	29.08	1193.09	|					
55	✓	10.14	1203.23	FRP + COUPLER					
56	✓	1.73	1204.96	TEMP |					
57	✓	1.68	1206.64	TEMP ↓					
58	✓	1.71	1208.35	TEMP ↓					

Notes:
RIG LANDING STICKUP = 7.21
- 5.12
= 2.08 Stickup

SUMMARY OF TALLY

Total Length tallied:	1208.35
Casing Stick-Up:	2.08
Length of Casing Cut-Off:	5.12 (deep joints)
Bottom of Well:	1201.15
Screened Interval:	500.33 - 1201.15
Total Screen in Hole:	

Sensor Types: Annular Conductivity Device (ACD), installed as pairs with 3 ft spacing
Conductivity Sensor (CS) 4 sensors with sing lead 20 ft spacing
Electrical Resistivity Tomography (ERT)

HALEY ALDRICH

470
500

5.12

HALEY ALDRICH

Casing Layout

Project Name.:	Project No.:
Well No.: O-02	Date: 3-6-17
Location:	Layout for: WELL INSTAL
Total Depth:	Geologist: C. GIUSTI

		760.59			239.33										
20.02	23	780.61	29.97	46	268.4										
20.01	22	800.62	29.03	45	297.43										
20.01	21	820.63	29.02	44	326.45										
20.00	20	840.63	29.03	43	355.48										
20.01	19	860.64	29.03	42	384.51										
20.01	18	880.65	28.93	41	413.44										
20.01	17	900.66	28.88	40	442.32										
20.00	16	920.66	28.88	39	471.20										
19.98	15	940.64	28.89	38	500.09										
19.99	14	960.63	0.50	37	500.59										
19.99	13	980.62	20.00	36	520.59										
19.99	12	1000.61	20.00	35	540.59										
19.98	11	1020.59	20.00	34	560.59			57							
19.99	10	1040.58	20.00	33	580.59			56	-1.87						
19.99	9	1060.57	19.99	32	600.58	9.68		55	7.81						
20.00	8	1080.57	20.00	31	620.58	29.08		54	36.89						
20.00	7	1100.57	20.01	30	640.59	28.80		53	65.69						
19.99	6	1120.56	20.00	29	660.59	28.73		52	94.42						
19.99	5	1140.55	20.00	28	680.59	28.96		51	123.38						
19.99	4	1160.54	20.00	27	700.59	28.96		50	152.34						
19.99	3	1180.53	20.00	26	720.59	28.94		49	181.28						
20.01	2	1200.54	20.00	25	740.59	29.07		48	210.35						
.36	1	1200.9	20.00	24	760.59	28.98		47	239.33						

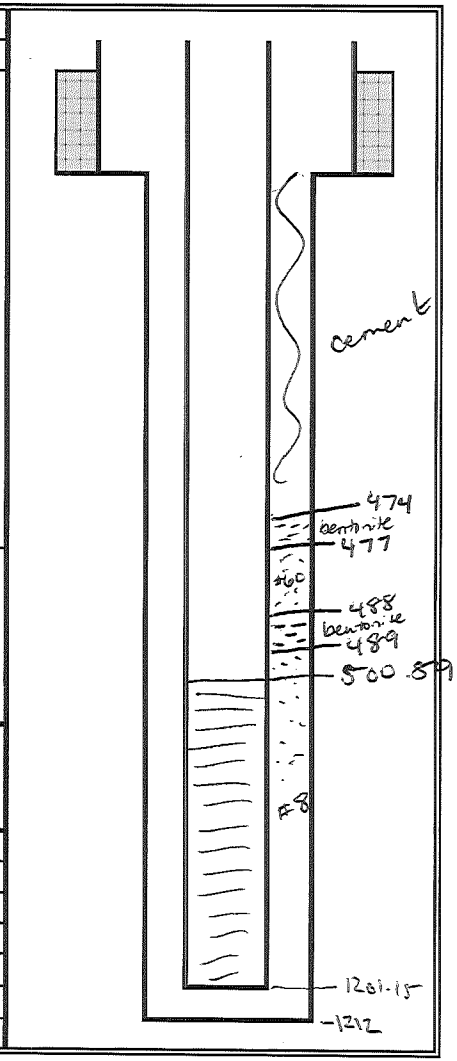
ESTIMATED ANNULAR MATERIAL RECORD

Project Name: FC1 **Project #.:** 129687-007 **Date:** 3-7-13
Well No.: O-02 **Geologist:** E. Gilbert

ANNULAR VOLUME CALCULATIONS

Total Depth of Borehole [T]:	1220 (1212) feet	Total Cased Depth:	1201.15 feet
Borehole Diameter [D]:	12.25 inches	Rat Hole Volume [R=(D²) 0.005454*L_r]:	0.00 Ft³
Screen Length [L_s]:	700.82 feet	Rat Hole Length [L_r]	11 feet
Screen Diameter [d_s]:	5.56 inches	Camera Tube Length [L_{ct}]	— feet
Casing Length [L_c]	500.33 feet	Camera Tube Diameter [d_{ct}]	— inches
Casing Diameter [d_c]	5.44 inches		

Screen Annular Volume (A_s): (D^2-d_s^2) 0.005454 = 0.65 Ft³/Lin. Ft
Casing Annular Volume (A_c): (D^2-d_c^2) 0.005454 = 0.66 Ft³/Lin. Ft
Casing/Cam.Tube Annular Volume (A_{c+ct}): (D^2-d_c^2-d_{ct}^2) 0.005454 = — Ft³/Lin. Ft



EQUATIONS

2,700 lbs. Silica Sand = 1 cubic yard = 27 cubic feet
Bentonite Sack = 0.69 ft³
[1] Volume of bag (Ft³) = bag weight/100
Silica Sand Super Sack = 3000 lbs.
[2] Calculated depth = Previous Calculated depth - (v/A)

No.	✓	Weight of Bag (lbs.)	Volume of Bag[1] (v) (ft³)	Total Vol. of Bags (ft³)	Calculated Depth[2] (ft bls)	Tagged Depth (ft bls)	Comments
1	✓	3000	30	30	1168	NA	ACCOUNT FOR RATHOLE IN CALC
2	✓	3000	30	60	1122	1133	#8 SAND
3	✓	3000	30	90	1076 / 1087	NA	#8 SAND
4	✓	3000	30	120	1030 / 1041	1054	#8 SAND
5	✓	3000	30	150	984	N/A ZB	#8 SAND
6	✓	3000	30	180	938	952	#8 SAND
7	✓	3000	30	210	913	932 NA	#8 SAND

VP

HALEY ALDRICH

ESTIMATED ANNULAR MATERIAL RECORD (Continued)

Project Name: FCI **Project No.:** 129687 **Geologist:** L Price

Well No.: C-02 **Date:** 3-6-18 +2

No.	✓	Weight of Bag (lbs.)	Volume of Bag[1](v) (ft^3)	Total Vol. of Bags (ft^3)	Calculated Depth[2] (ft bls)	Tagged Depth (ft bls)	Comments
#8	✓	3000	30	270, 240	925	932/926	#8 Sand, 926 w/ (-0.6/100') tagline stretch
9	✓	9000	90	360, 330	850	854/849	3 x #8 Sand, 849' w/ line stretch.
10	✓	9000	90	450, 420	760	741/736	3 x 3000 lb #8 sand, 736' w tag correction
11	✓	9000	90	540, 510	670	642/638	3 x 3000 lb #8 sand, 638' w/ tag correction
12	✓	6000	60	570	545	577/568	2 x 3000 lb #8 Sand, 568 w/ tag correction
13	✓	3000	30	600	514	540/537	1 x 3000 lb #8 Sand / 537 w/ tag correction
14	✓	3000	30	630	507	509/501	1 x 3000 lb #8 Sand / 501 w/ tag correction
15	✓	1500	15	645	490	490/488	½ 3000 lb #8 Sand / 488 w/ tag correction
16		1500	15	660	500	532/528	Swab 1200-1100 for 15 mins
16	✓	1500	15	660	500	508/505	½ 3000 lb #8 Sand / 505 w/ correction
17	✓	1000	10	670	490	490/487	⅓ 3000 lb #8 Sand / 487 w/ correction
		—	—	—	—	495/492	1200-1100 swab for 10 min
		—	—	—	—	495/492	1200-1100 swab for 10 min
		—	—	—	—	496/493	1100-1000 swab for 15 min
		—	—	—	—	497/494	1100-1000 swab for 10 min
		—	—	—	—	498/495	1100-1000 swab for 10 min
		—	—	—	—	498/495	1100-1000 swab for 10 min
		—	—	—	—	497/494	1000-900 swab for 15 min
		—	—	—	—	497/494	1000-900 swab for 10 min
		—	—	—	—	497/494	900-800 swab for 15 min
		—	—	—	—	495/494	900-800 swab for 10 min
		—	—	—	—	506/503	800-700 swab for 15 min 503 w/ correction

Notes:

Total Depth: 1220 (1212)

Borehole Diameter: 12.25"

Screen Annular V = 0.65 ft^3/Lin Ft

Casing " = 0.66 ft^3/Lin Ft

ESTIMATED ANNULAR MATERIAL RECORD (Continued)

Project Name: FCI **Project No.:** 129687-007 **Geologist:** C Price +
Well No.: 0-02 **Date:**

No.	✓	Weight of Bag (lbs.)	Volume of Bag[1](v) (ft^3)	Total Vol. of Bags (ft^3)	Calculated Depth[2] (ft bls)	Tagged Depth (ft bls)	Comments
18	✓	800	8	675	490	497/494	#8 silica sand
—	—	—	—	—	—	498/495	Swab 800-700, 10 min
—	—	—	—	—	—	498/495	Swab 800-700, 10 min
—	—	—	—	—	—	500/497	Swab 600-700, 15 min
19	✓	460	4.6	682.6	490	501/498	7-5 gal buckets #8 sand
20	✓	740	7.4	690	488	491/488	Rest of partial bag ~7.4 ft³. #8 sand
—	—	—	—	—	—	491/488	Swab 600-700, 10 min
—	—	—	—	—	—	493/490	Swab 500-600, 15 min
—	—	—	—	—	—	*494/491	Swab 500-600, 10 min (at 06:28)
—	—	—	—	—	—	*497/494	Swab 500-600, 10 min (at 07:00)
						*498/~~495~~ 495	Swab 500-600, 10 min (at 08:00)
						498/495	Swab 500-600 10 min
21	✓	~~67~~	0.67	694.7	490	*493/489	#8 gravel - 5 gal buckets (x7)
22	✓	67	0.67	695.4	—	491/488	(1) 5 gal bucket PEL PLUG
23	✓	50	0.50	702.9	480	*480/477	#100 sand (x15)
24	✓	67	0.67	703.6	—	477/474	(1) 5 gal bucket PEL PLUG
							cement

Notes: ~~*Based on the tag at 08:00 is 490 (488' w/ correction). The~~ ~~believe the tag at 07:00 is incorrect there was a shift change between the~~ ~~tags at 6:28 and~~ TK 3/9/18
*based on 14" borehole from caliper log (0.93 ft³/linear foot)

24 cuyd
648 ft³

HALEY ALDRICH

CEMEX

54375454

Plant:	Begin Loading:	To Job:	Arrive Job:	Start Unload:	Finish Unload:	Leave Job:	Return Plant:
D11741	1224	1230	1320				

Customer Code: 3181157 Customer Name: FLORENCE COPPER INC

Customer Job Number: FLORENCE WELL 6406 Order Code / Date: 01/19/18

Project Code: 41097304 Project Name: FLORENCE WELL

Project P.O. Number: NO Order P.O. Number: NO PO

Ticket Date: 01/19/18 Delivery Address: 1575 W HUNT HIGHWAY

Map Page: Map/Row/Column: PIN PINMY201

Delivery Instructions: ENTR @ MAIN GATE GO TO 4 WAY STOP & GO R, GO APPRX 1 MILE TO THE RIGS**BATCH RECORDS**

Dispatcher: knash

Ticket Number: 44464445

Due On Job:	Slump:	Truck Number:	Driver Number:	Driver Name:	End Use:
13:00	6.00	10032047	411286	MORLEY, WILL	BLDNG: OTHER

LOAD QUANTITY	CUMULATIVE QUANTITY	ORDERED QUANTITY	MATERIAL CODE	PRODUCTION DESCRIPTION	UOM	UNIT PRICE	AMOUNT
7.00	7.00	7.00	1333049	TYPE II/V SLURRY 21 SK CMT/W YD3			
				LEGACY MATERIAL NO:			
1.00			1247818	FUEL SURCHARGE ADJ			
1.00			1202743	ENVIRONMENTAL FEE			
1.00			1572392	FREIGHT NON TAXABLE ARIZONA			

JAN 19 '18 12:24

☐ Cash ☐ Check ☐ Charge Check # / Auth Code: _____

Signature of Driver Receiving Cash:

Cash Received:

Total COD Order Amount to Collect Without Standby Charges:

Comments:

WATER ADDED: _____ GAL YARDS IN DRUM: _____ WHEN ADDED.

SIGNATURE

CURB LINE CROSSED AT OWNER'S/AGENT'S REQUEST:

SIGNATURE

☐ LOAD WAS TESTED BY: Hailey Aldrich

Notice: Our drivers will make every effort to place materials where the customer designates, but the Company assumes no responsibility for damages inside curb or property line. Customer agrees to the terms of sale and delivery and accepts concrete as is. Due to important factors which are out of our control after delivery, this Company will not accept any responsibility for the finished results. No credit for returned concrete. Buyers exceptions and claims shall be deemed waived unless made to us in writing within one business day after the receipt of materials.

SPECIAL TERMS: Any water added is at customers own risk. If water is added on job, concrete strength is no longer guaranteed. **WARNING**: Product may cause skin and/or eye irritation. **CAUTION**: Material may be hazardous to your safety and health. Please refer to the backside of this ticket for important safety handling information, and to the material safety data sheets for additional information.

AUTHORIZED SIGNATURE:

Ⓧ

68UNIVERSAL

CUSTOMER

BASIC ENERGY SERVICES

3451 LeTourneau
Gillette, WY 82718
307-682-5258

Cementing Ticket No. 1719 21382

Date	Customer Order No.		Sect.	Twp.	Range	Truck Called Out	On Location	Job Began	Job Completed
03-09-18						13:00	13:30	14:00	15:00

Owner	Contractor	Charge To
Florance Copper Mine	Hydro Resources	Hydro West

Mailing Address	City	State

Well No. & Form	Place	County	State
O-02	copper mine	Pinal	AZ

Depth of Well	Depth of Job	Casing (New / Used)	Size / Weight	Size of Hole / Amt. and Kind of Cement	Cement Left in casing by / Request Necessity
1225	469		Size 5.5 / Weight	12.25 / 2/5	Request Necessity 0 feet

Kind of Job: Observation Well

Drillpipe / Tubing 2 7/8 (Rotary / Cable) Truck No. 28983

Price Reference No.
Price of Job 1210
Second Stage
Pump Truck Mileage 3825
P.U. Mileage 765
Other Charges
Total Charges 5,800.00

Remarks
safety meeting held
rig up to tubing with hose and valve
pump 5 bbls to clear tubing
pump and mix 500 sks type 2/5 cement
displace .5 bbl thru mixer
rig down from tubing
wash up in cellar
good cement to surface
THANK YOU

Cementer Bryan Hammond Lead Yield 1.38 Lead Wt. 14.6 Lead Water 6.8 SV 117

Helper Daniel Johnson Tail Yield Tail Wt. Lead Water SV

District Gillette State Wy

The above job was done under supervision of the owner, operator, or his agent whose signature appears below.

Agent of contractor or operator

Sales Ticket for Materials Only

QUANTITY SACKS	BRAND AND TYPE	PRICE	TOTAL
16	Crew subsistance	500	8,000.00
12	Transportaton of cement	150	1,800.00
			0.00
			0.00
			0.00
	P.O. # 152614		0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
Plugs			0.00

Equipment #	HRS				
28983	1.5	500	Handling & Dumping	2.44	1,220.00
84127	1		Mileage		0.00
			Sub Total		16,820.00
			Discount		
			Sales Tax		
Signature of operator			Total		

APPENDIX E

Geophysical Logs

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY FLORENCE COPPER
WELL ID O-02
FIELD FLORENCE COPPER
COUNTY PINAL STATE ARIZONA

TYPE OF LOGS: E-LOG
MORE: NAT. GAMMA
LOCATION

SEC TWP RGE

OTHER SERVICES
TEMPERATURE
FLUID RESISTIVITY
SONIC
DEVIATION

PERMANENT DATUM ELEVATION K.B.
LOG MEAS. FROM GROUND LEVEL ABOVE PERM. DATUM D.F.
DRILLING MEAS. FROM GROUND LEVEL G.L.

DATE	3-5-18	TYPE FLUID IN HOLE	MUD
RUN No	1 & 2	MUD WEIGHT	N/A
TYPE LOG	E-LOG - NAT. GAMMA	VISCOSITY	N/A
DEPTH-DRILLER	1224 FT.	LEVEL	FULL
DEPTH-LOGGER	1212 FT.	MAX. REC. TEMP.	25.32 DEG. C
BTM LOGGED INTERVAL	1212 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.2 FT
DRILLER / RIG#	HYDRO RESOURCES	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	A. OLSON / M. QUINONES	TOOL STRING/SN	GEOVISTA E-LOG SN 4035
WITNESSED BY	CHAD - H&A	LOG TIME:ON SITE/OFF SITE	10:30 P.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	? IN.	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	12 1/4 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	3-5-18	**Date**	3-5-18	**Date**	3-5-18		
Run No.	1	**Run No.**	2	**Run No.**	3		
Tool Model	MSI COMBO TOOL	**Tool Model**	GEOVISTA E-LOG	**Tool Model**	MSI 60MM SONIC		
Tool SN	5543	**Tool SN**	4035	**Tool SN**	5050		
From	SURFACE	**From**	SURFACE	**From**	SURFACE		
To	1212 FT.	**To**	1212 FT.	**To**	1212 FT.		
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON		
Truck No	900	**Truck No**	900	**Truck No**	900		
Operation Check	3-4-18	**Operation Check**	3-4-18	**Operation Check**	3-4-18		
Calibration Check	3-4-18	**Calibration Check**	3-4-18	**Calibration Check**	N/A		
Time Logged	10:40 P.M.	**Time Logged**	11:40 P.M.	**Time Logged**	12:15 A.M.		
Date	3-5-18	**Date**		**Date**			
Run No.	4	**Run No.**	5	**Run No.**	6		
Tool Model	MSI DEVIATION	**Tool Model**		**Tool Model**			
Tool SN	6002	**Tool SN**		**Tool SN**			
From	SURFACE	**From**		**From**			
To	1212 FT.	**To**		**To**			
Recorded By	A. OLSON	**Recorded By**		**Recorded By**			
Truck No	900	**Truck No**		**Truck No**			
Operation Check	3-4-18	**Operation Check**		**Operation Check**			
Calibration Check	N/A	**Calibration Check**		**Calibration Check**			
Time Logged	1:00 A.M.	**Time Logged**		**Time Logged**			

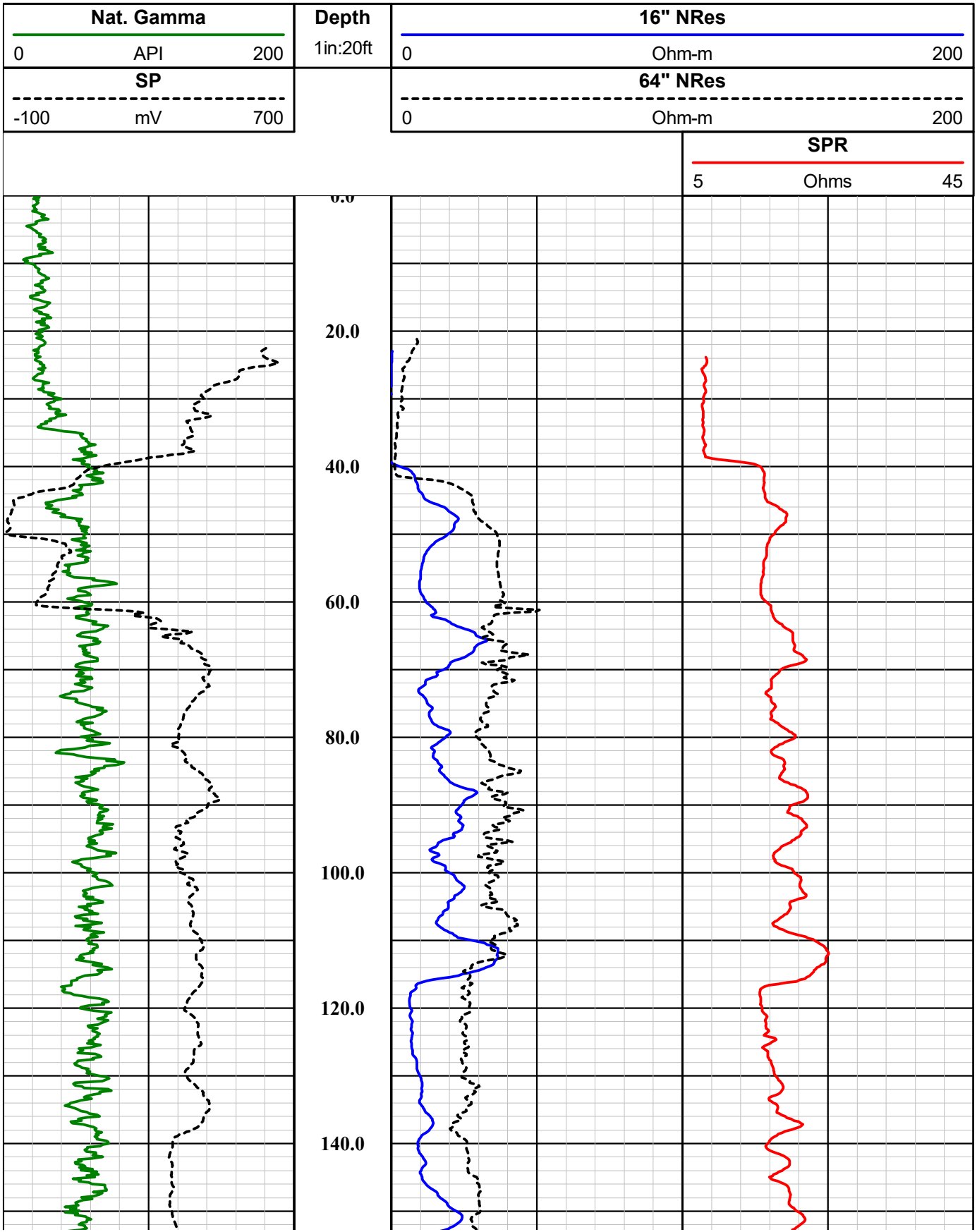
Additional Comments:

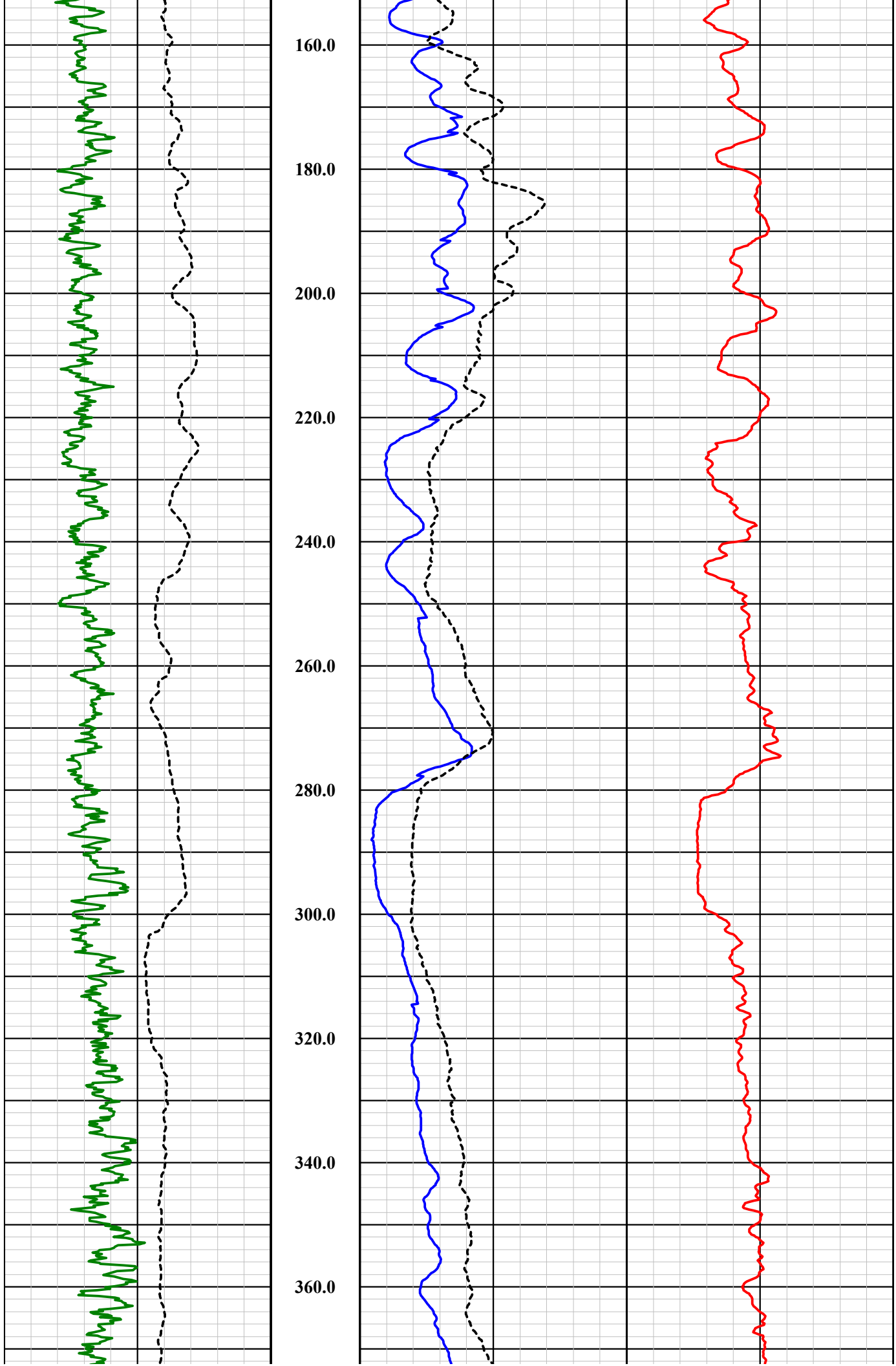
Caliper Arms Used: 15 IN. **Calibration Points:** 8 IN. & 23 IN.

E-Log Calibration Range: 10-1000 OHM-M **Calibration Points:** 10 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

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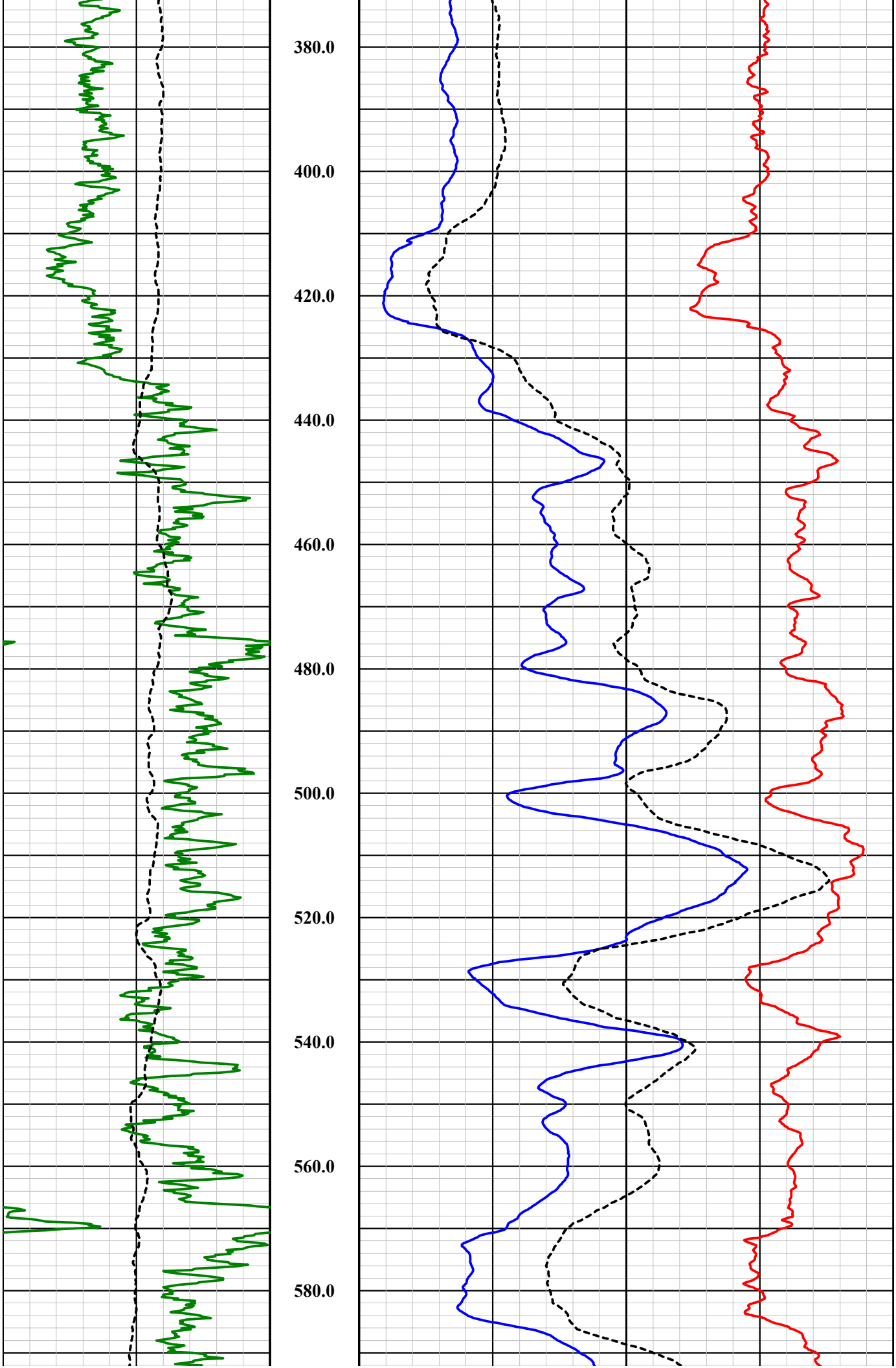
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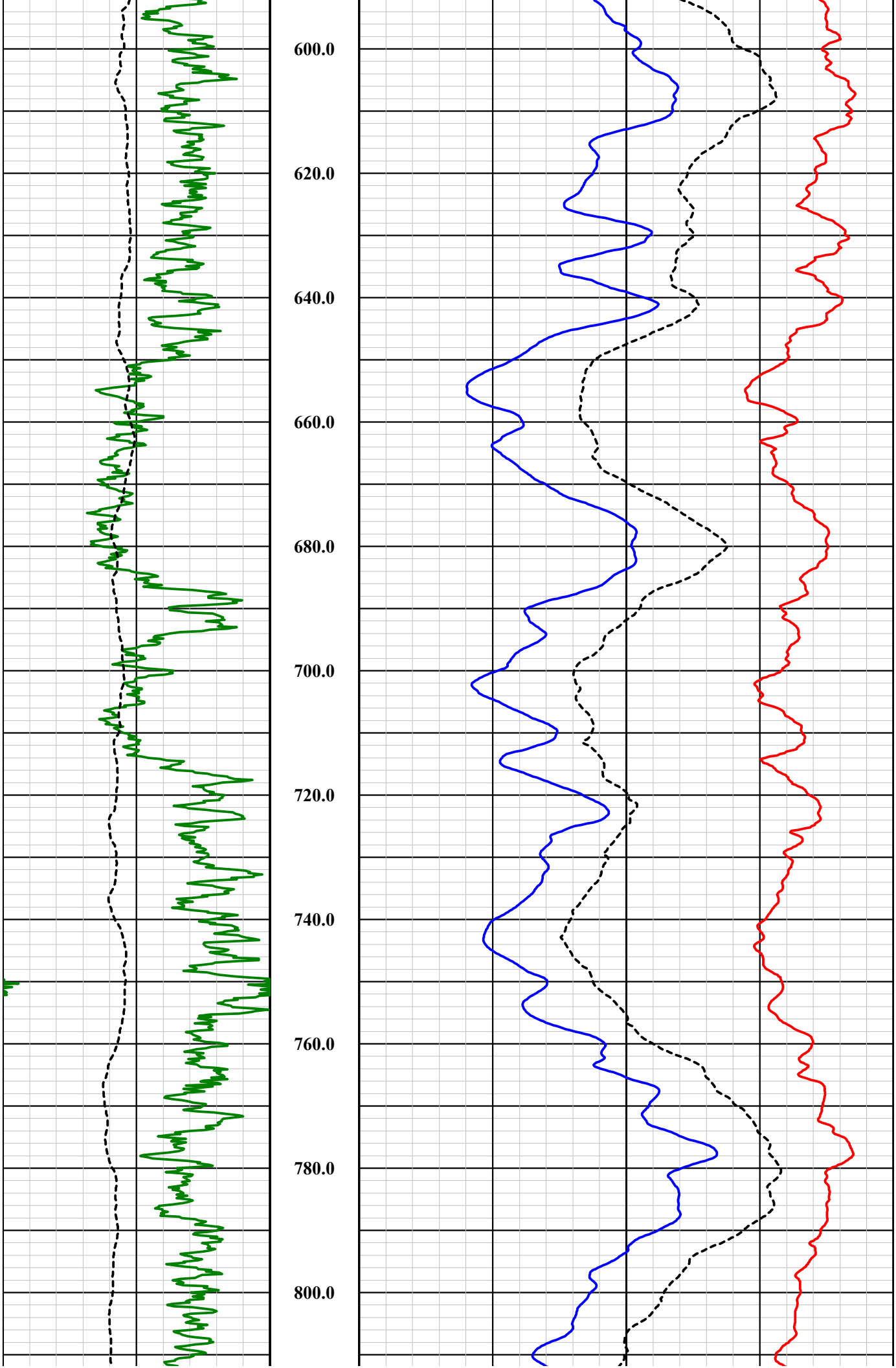
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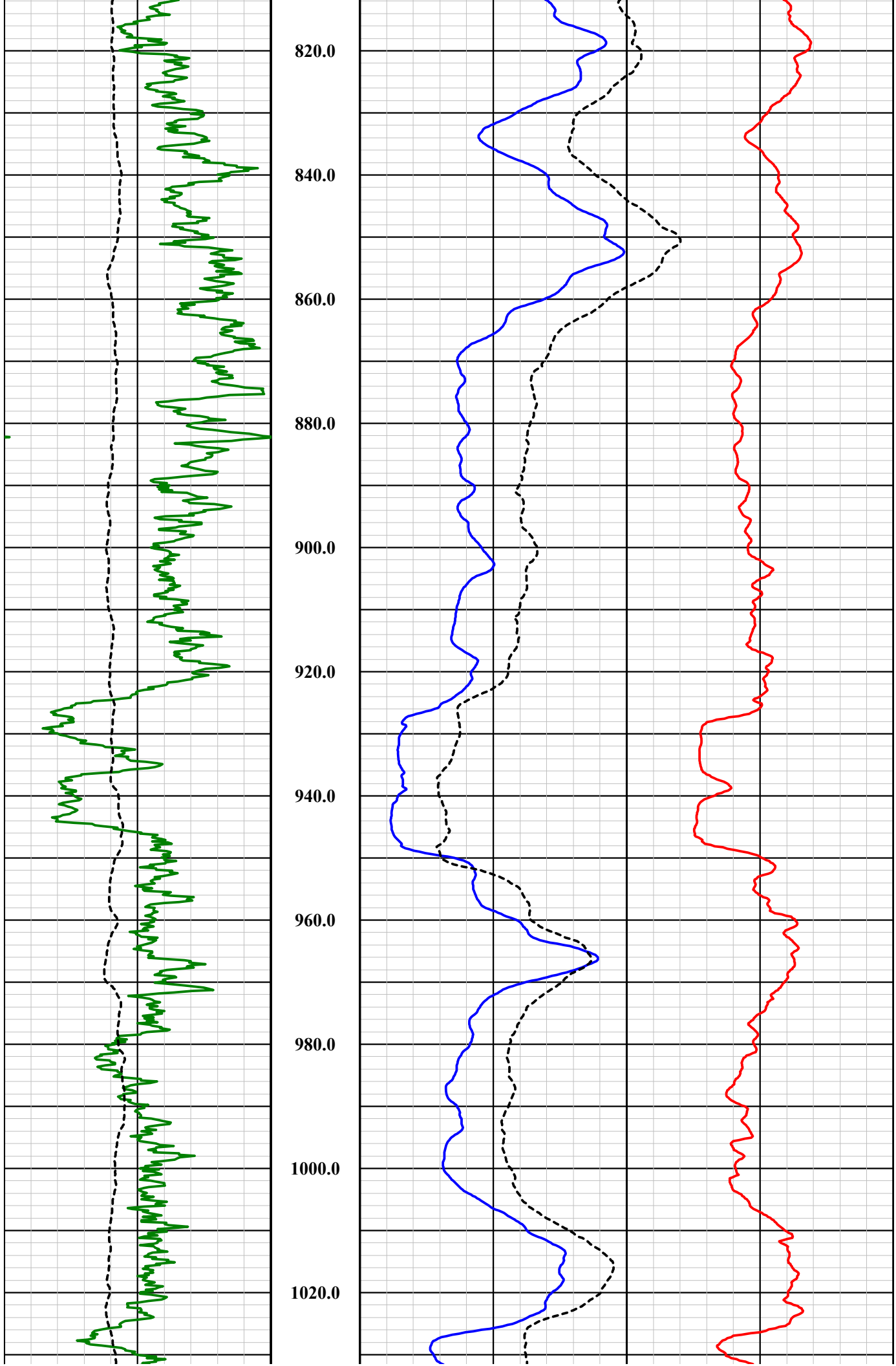
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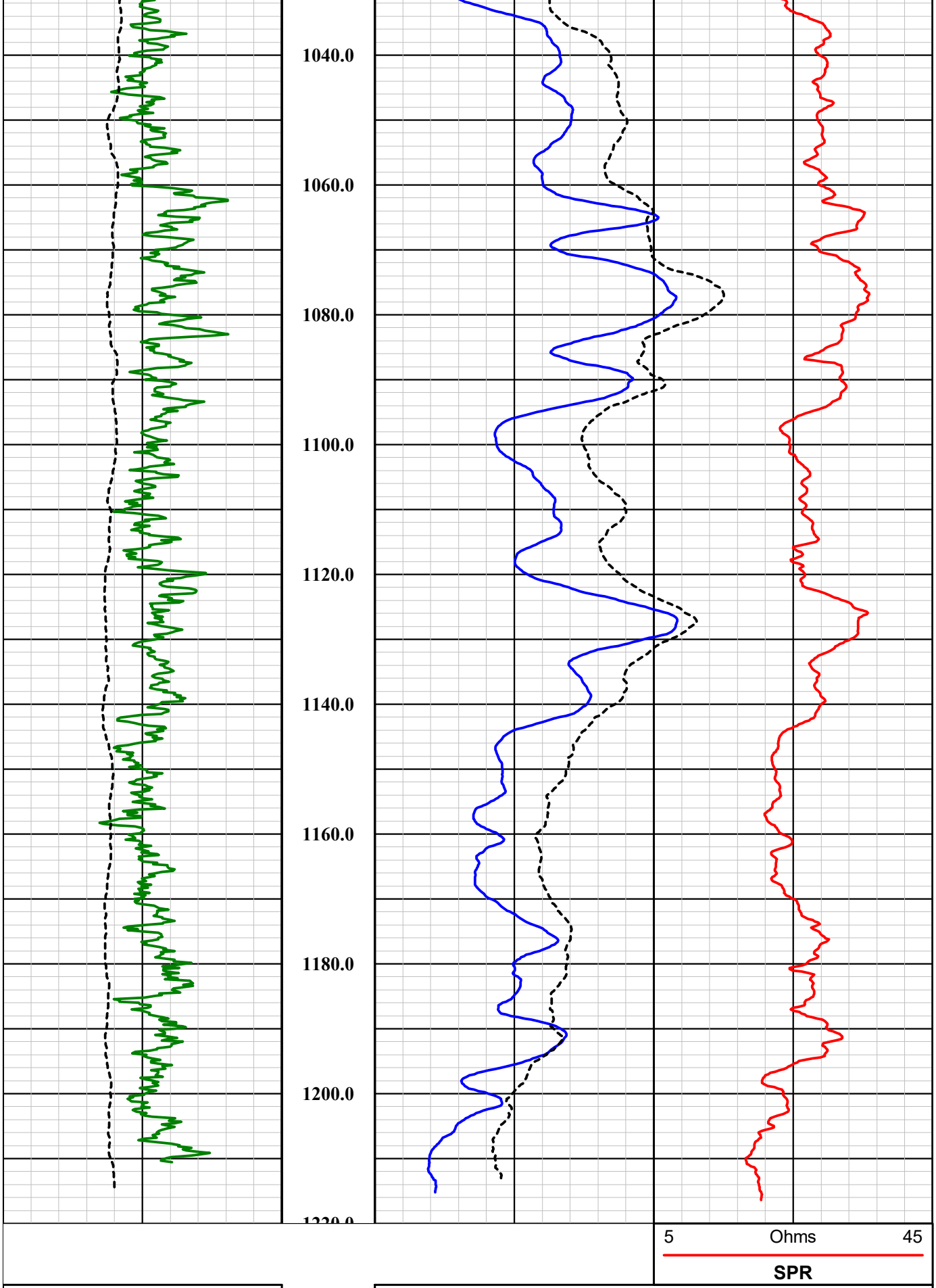
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SPR
-100
mV
700
SP
0
Ohm-m
200
64" NRes
0
API
200
Nat. Gamma
1in:20ft
Depth
0
Ohm-m
200
16" NRes

GeoVista E-Log Tool

Tool SN: 4035 & 4790

Probe Top = Depth Ref.

Bridle connects to wireline cablehead: Wireline armor is the B Electrode.

Four Conductor Probe Top

Bridle Electrode (N Electrode)

64" Normal Resistivity Electrode/Spontaneous Potential Electrode (M Electrode)

Probe Length = 2.3 m or 7.55 ft
Bridle Length = 10.0 m or 32.81 ft

Probe Weight = 7.0 kg or 15.4 lbs

Can only be collected in fluid

Isolation Bridle - Not shown in diagram but is necessary for operation

Electrode Measuring Points (from bottom of probe)
- Spontaneous Potential (SP): 0.65 m or 2.13 ft
- 16" Normal Resistivity (16" NRes): 0.50 m or 1.64 ft
- 64" Normal Resistivity (64" NRes): 1.10 m or 3.61 ft
- Single Point Resistance (SPR): 0.25 m or 0.82 ft

Temperature Rating: 80 Deg C (176 Deg F)
Presure Rating: 200 bar (2900 psi)

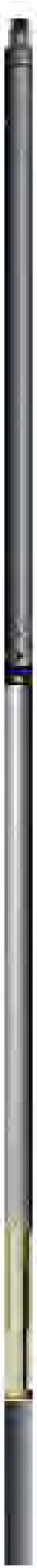
16" Normal Resistivity Electrode (M Electrode)

Current Electrode/Single Point Resistance (A Electrode)

1.65" or 42 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	O-02
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final E-Log Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	O-02
FIELD	FLORENCE COPPER
COUNTY	PINAL
STATE	ARIZONA

TYPE OF LOGS: GAMMA - CALIPER
MORE: TEMP. / FLUID RES.

LOCATION

SEC TWP RGE

OTHER SERVICES
E-LOG
SONIC
DEVIATION

PERMANENT DATUM	ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL	G.L.

DATE	3-5-18	TYPE FLUID IN HOLE	MUD
RUN No	1	MUD WEIGHT	N/A
TYPE LOG	GAMMA-CALIPER-TFR	VISCOSITY	N/A
DEPTH-DRILLER	1224 FT.	LEVEL	FULL
DEPTH-LOGGER	1212 FT.	MAX. REC. TEMP.	25.32 DEG. C
BTM LOGGED INTERVAL	1212 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.2 FT
DRILLER / RIG#	HYDRO RESOURCES	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	A. OLSON / M. QUINONES	TOOL STRING/SN	MSI COMBO TOOL SN 5543
WITNESSED BY	CHAD - H&A	LOG TIME:ON SITE/OFF SITE	10:30 P.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	? IN.	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	12 1/4 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	3-5-18	**Date**	3-5-18	**Date**	3-5-18	**Date**		**Date**	
Run No.	1	**Run No.**	2	**Run No.**	3	**Run No.**	4	**Run No.**	5
Tool Model	MSI COMBO TOOL	**Tool Model**	GEOVISTA E-LOG	**Tool Model**	MSI 60MM SONIC	**Tool Model**	MSI DEVIATION	**Tool Model**	
Tool SN	5543	**Tool SN**	4035	**Tool SN**	5050	**Tool SN**	6002	**Tool SN**	
From	SURFACE	**From**	SURFACE	**From**	SURFACE	**From**	SURFACE	**From**	
To	1212 FT.	**To**	1212 FT.	**To**	1212 FT.	**To**	1212 FT.	**To**	
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	
Truck No	900	**Truck No**	900	**Truck No**	900	**Truck No**	900	**Truck No**	
Operation Check	3-4-18	**Operation Check**	3-4-18	**Operation Check**	3-4-18	**Operation Check**	3-4-18	**Operation Check**	
Calibration Check	3-4-18	**Calibration Check**	3-4-18	**Calibration Check**	N/A	**Calibration Check**	N/A	**Calibration Check**	
Time Logged	10:40 P.M.	**Time Logged**	11:40 P.M.	**Time Logged**	12:15 A.M.	**Time Logged**	1:00 A.M.	**Time Logged**	

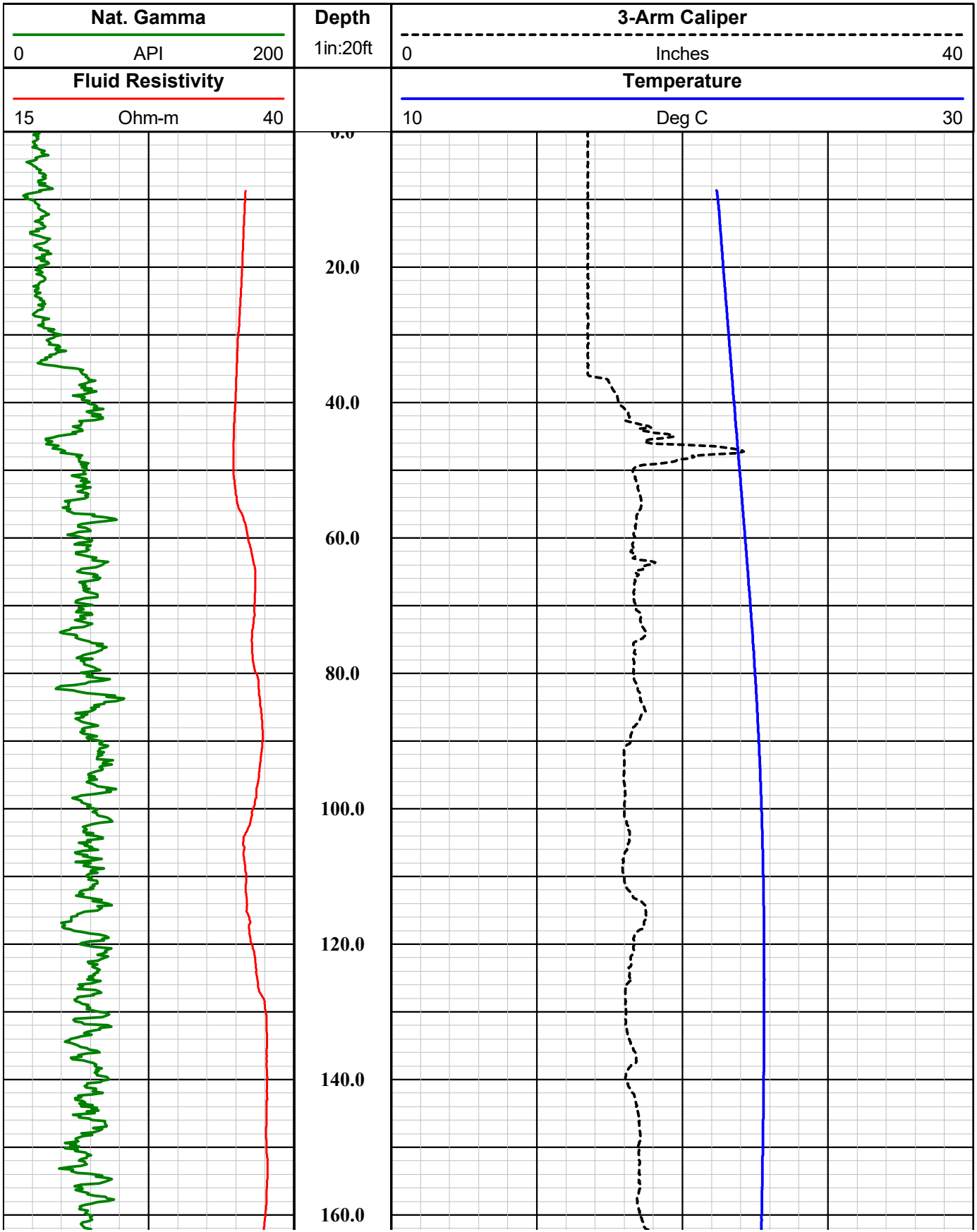
Additional Comments:

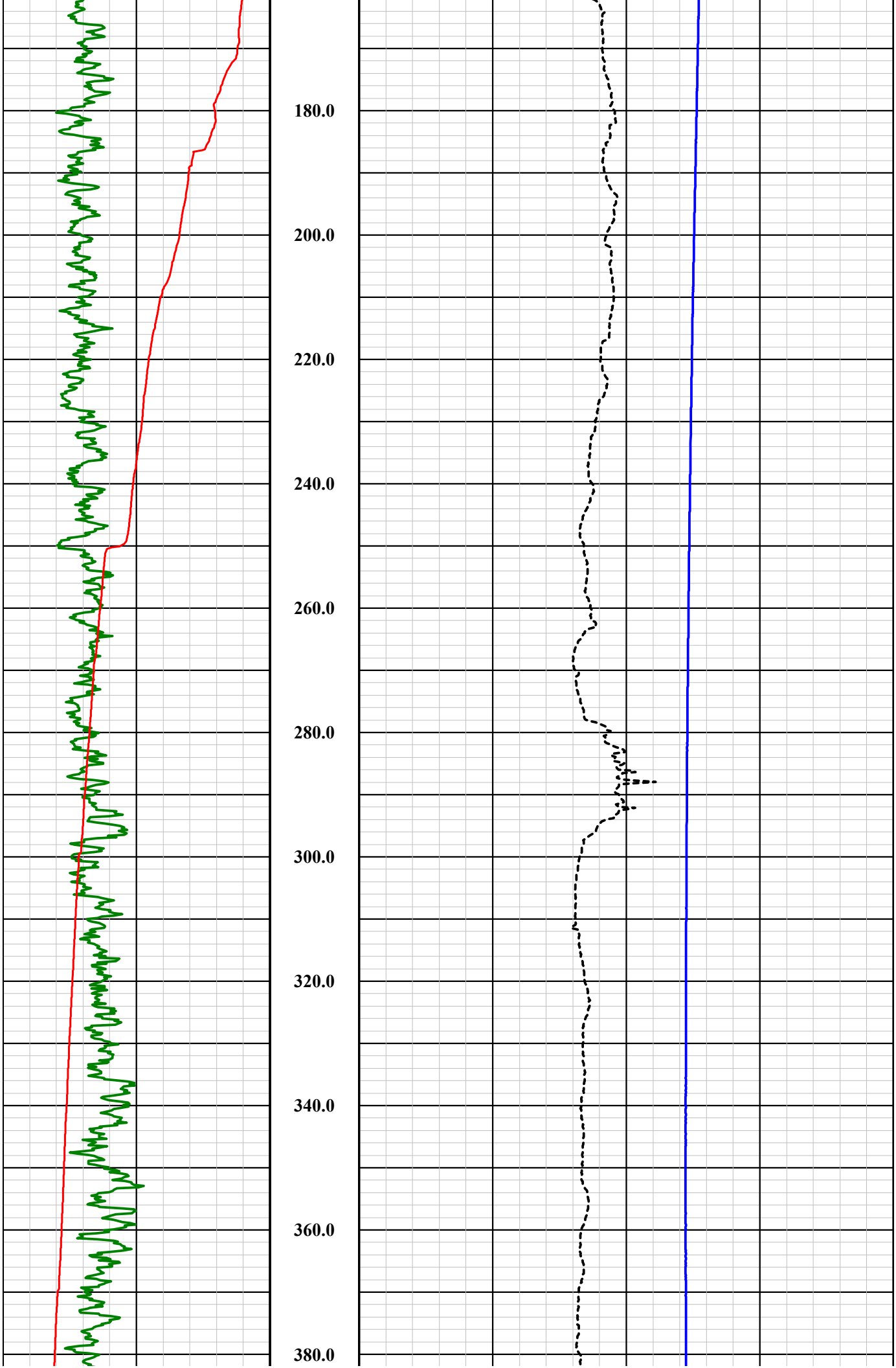
Caliper Arms Used: 15 IN. **Calibration Points:** 8 IN. & 23 IN.

E-Log Calibration Range: 10-1000 OHM-M **Calibration Points:** 10 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

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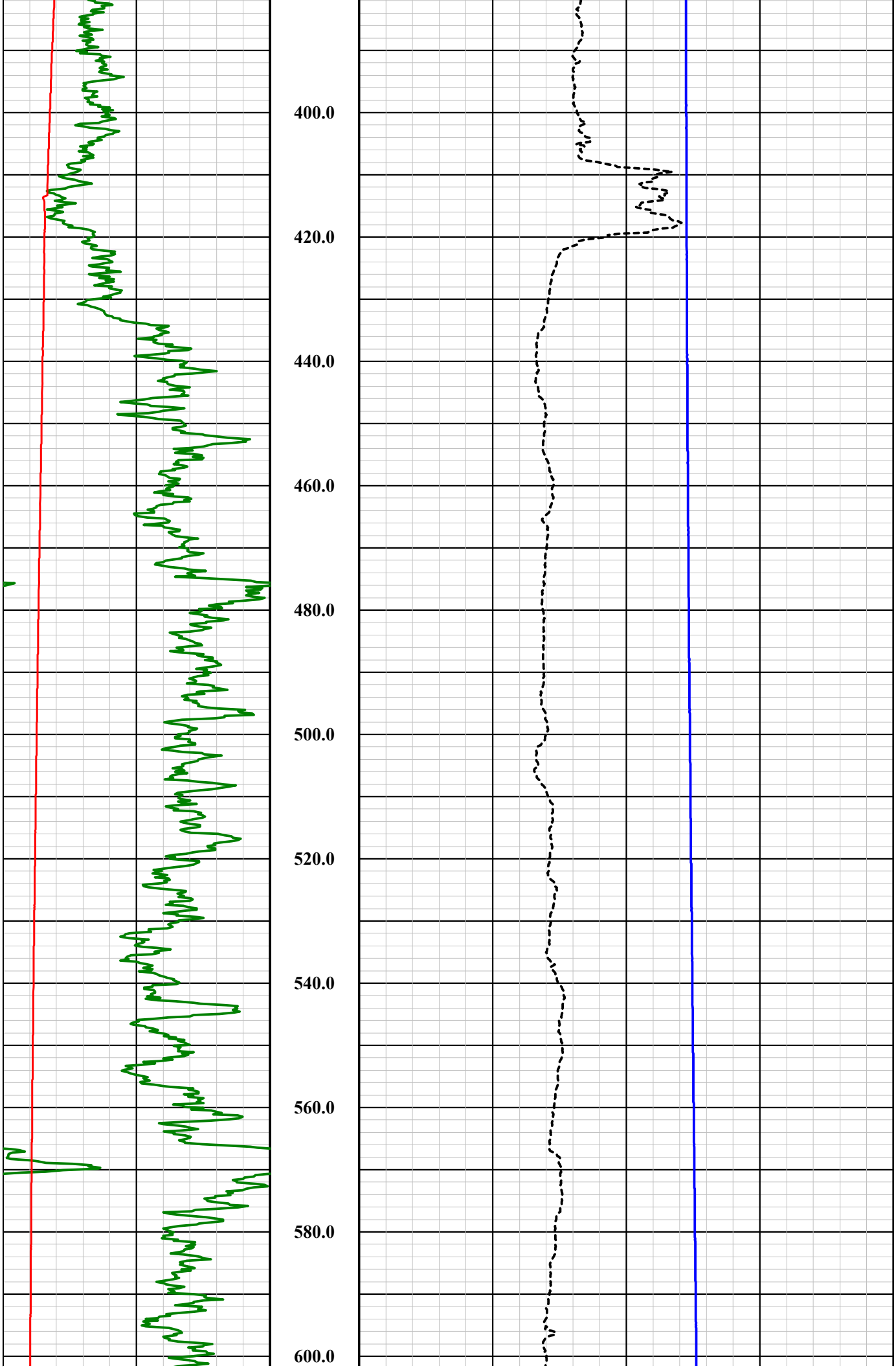
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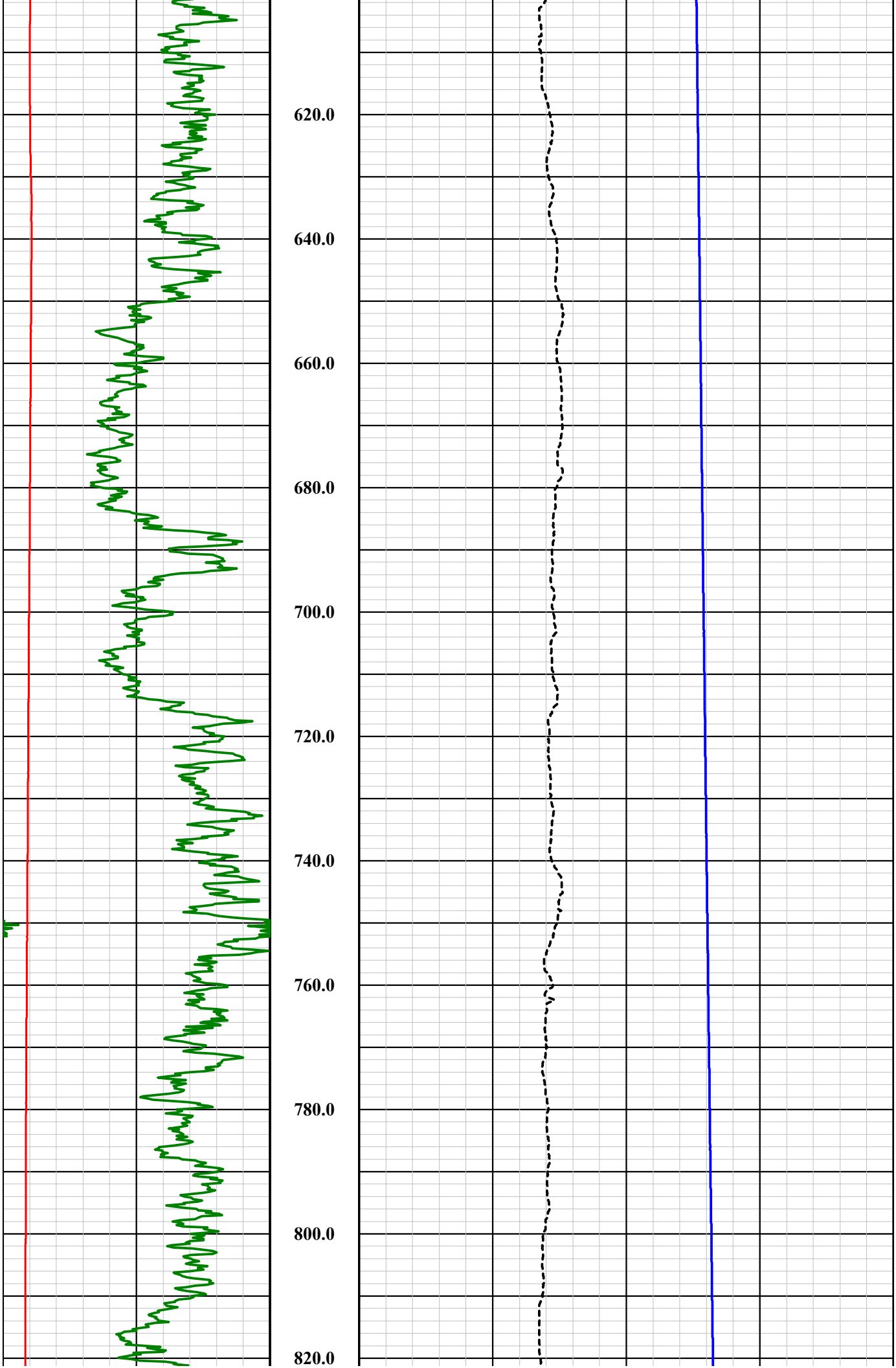
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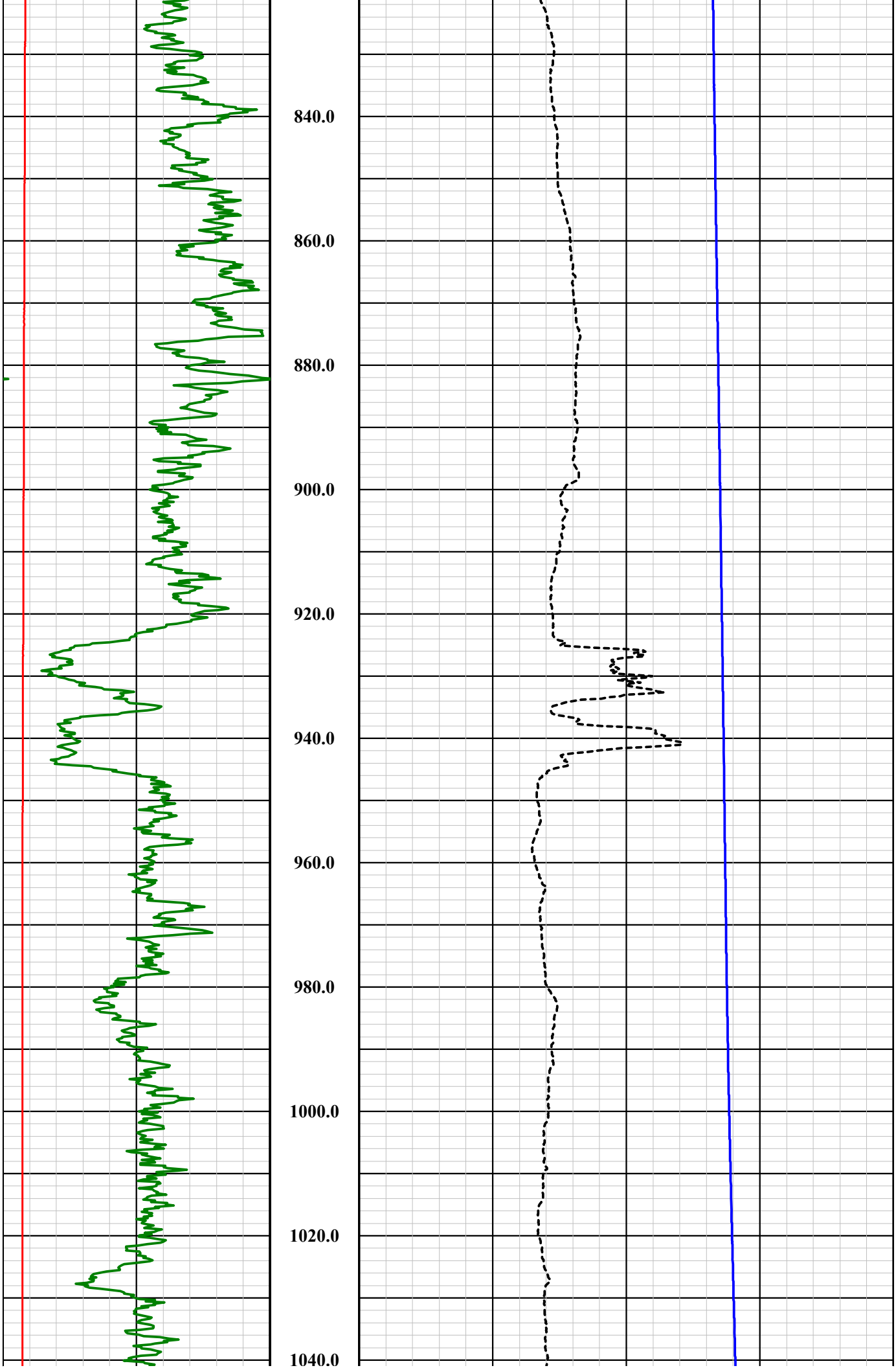
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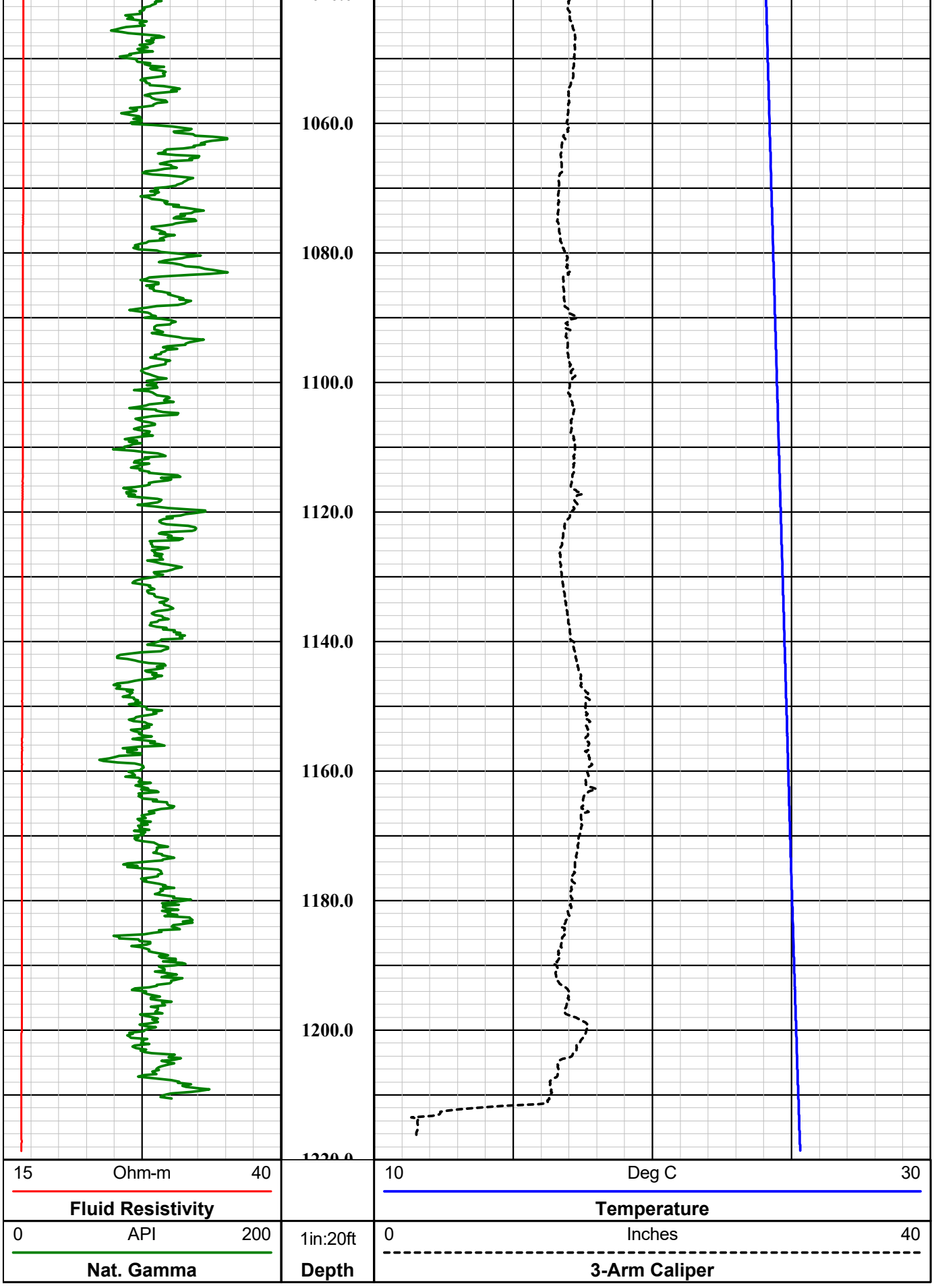
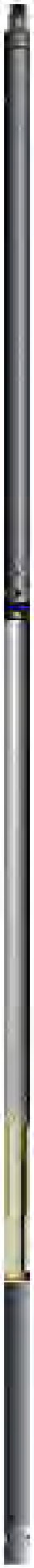


MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

	Company	FLORENCE COPPER

Southwest Exploration Services, LLC

borehole geophysics & video services

Well	O-02
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final GCT Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	O-02
FIELD	FLORENCE COPPER
COUNTY	PINAL
STATE	ARIZONA

TYPE OF LOGS: 60mm SONIC
MORE: GAMMA - CALIPER

LOCATION

SEC TWP RGE

OTHER SERVICES
E-LOG
TEMPERATURE
FLUID RESISTIVITY
DEVIATION

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	3-5-18	TYPE FLUID IN HOLE	MUD
RUN No	1 & 3	MUD WEIGHT	N/A
TYPE LOG	SONIC - GAMMA - CALIPER	VISCOSITY	N/A
DEPTH-DRILLER	1224 FT.	LEVEL	FULL
DEPTH-LOGGER	1212 FT.	MAX. REC. TEMP.	25.32 DEG. C
BTM LOGGED INTERVAL	1212 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.25 FT
DRILLER / RIG#	HYDRO RESOURCES	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	A. OLSON / M. QUINONES	TOOL STRING/SN	MSI 60mm SONIC SN 5050
WITNESSED BY	CHAD - H&A	LOG TIME:ON SITE/OFF SITE	10:30 P.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	? IN.	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	12 1/4 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	3-5-18	**Date**	3-5-18	**Date**	3-5-18		
Run No.	1	**Run No.**	2	**Run No.**	3		
Tool Model	MSI COMBO TOOL	**Tool Model**	GEOVISTA E-LOG	**Tool Model**	MSI 60MM SONIC		
Tool SN	5543	**Tool SN**	4035	**Tool SN**	5050		
From	SURFACE	**From**	SURFACE	**From**	SURFACE		
To	1212 FT.	**To**	1212 FT.	**To**	1212 FT.		
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON		
Truck No	900	**Truck No**	900	**Truck No**	900		
Operation Check	3-4-18	**Operation Check**	3-4-18	**Operation Check**	3-4-18		
Calibration Check	3-4-18	**Calibration Check**	3-4-18	**Calibration Check**	N/A		
Time Logged	10:40 P.M.	**Time Logged**	11:40 P.M.	**Time Logged**	12:15 A.M.		
Date	3-5-18	**Date**		**Date**			
Run No.	4	**Run No.**	5	**Run No.**	6		
Tool Model	MSI DEVIATION	**Tool Model**		**Tool Model**			
Tool SN	6002	**Tool SN**		**Tool SN**			
From	SURFACE	**From**		**From**			
To	1212 FT.	**To**		**To**			
Recorded By	A. OLSON	**Recorded By**		**Recorded By**			
Truck No	900	**Truck No**		**Truck No**			
Operation Check	3-4-18	**Operation Check**		**Operation Check**			
Calibration Check	N/A	**Calibration Check**		**Calibration Check**			
Time Logged	1:00 A.M.	**Time Logged**		**Time Logged**			

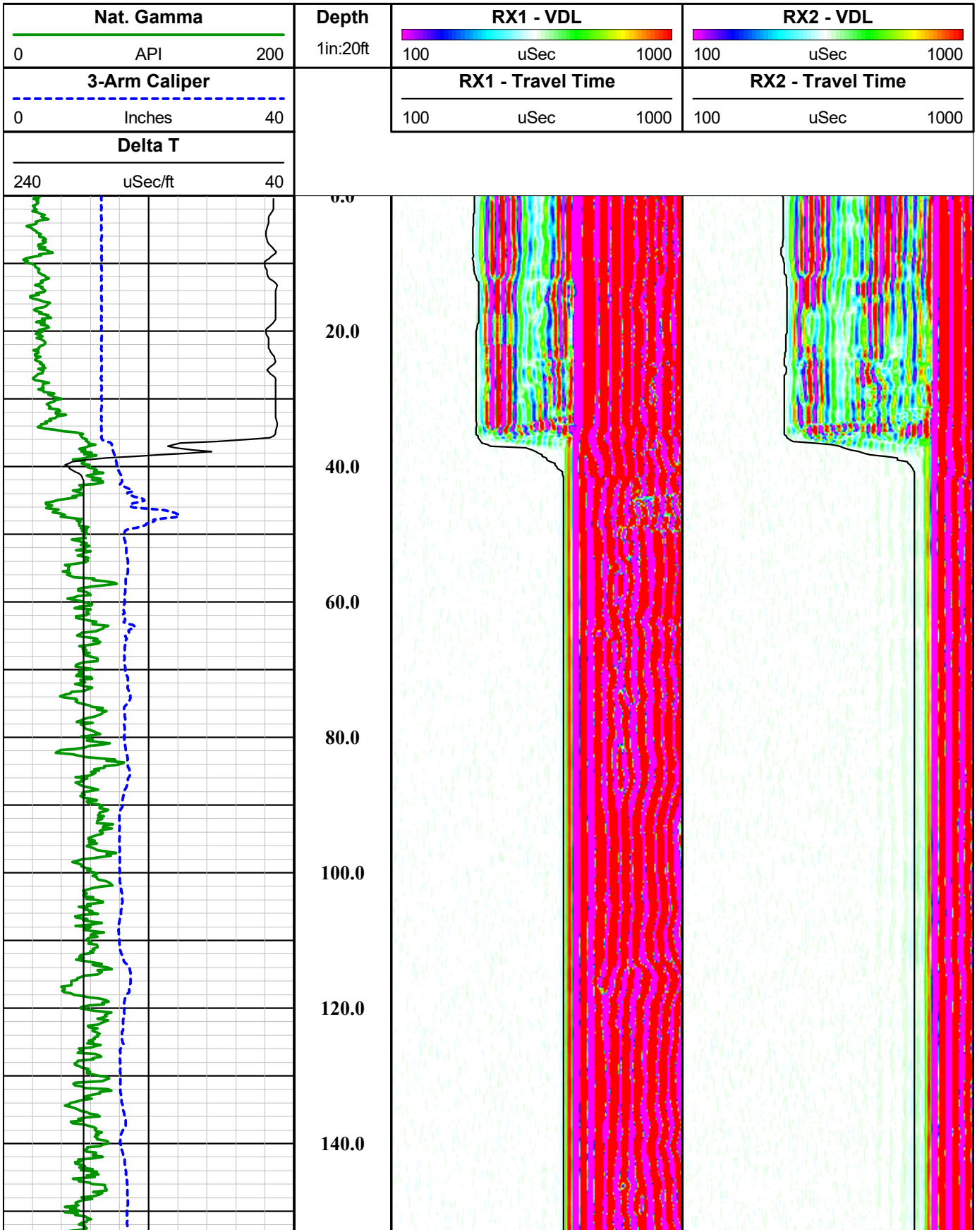
Additional Comments:

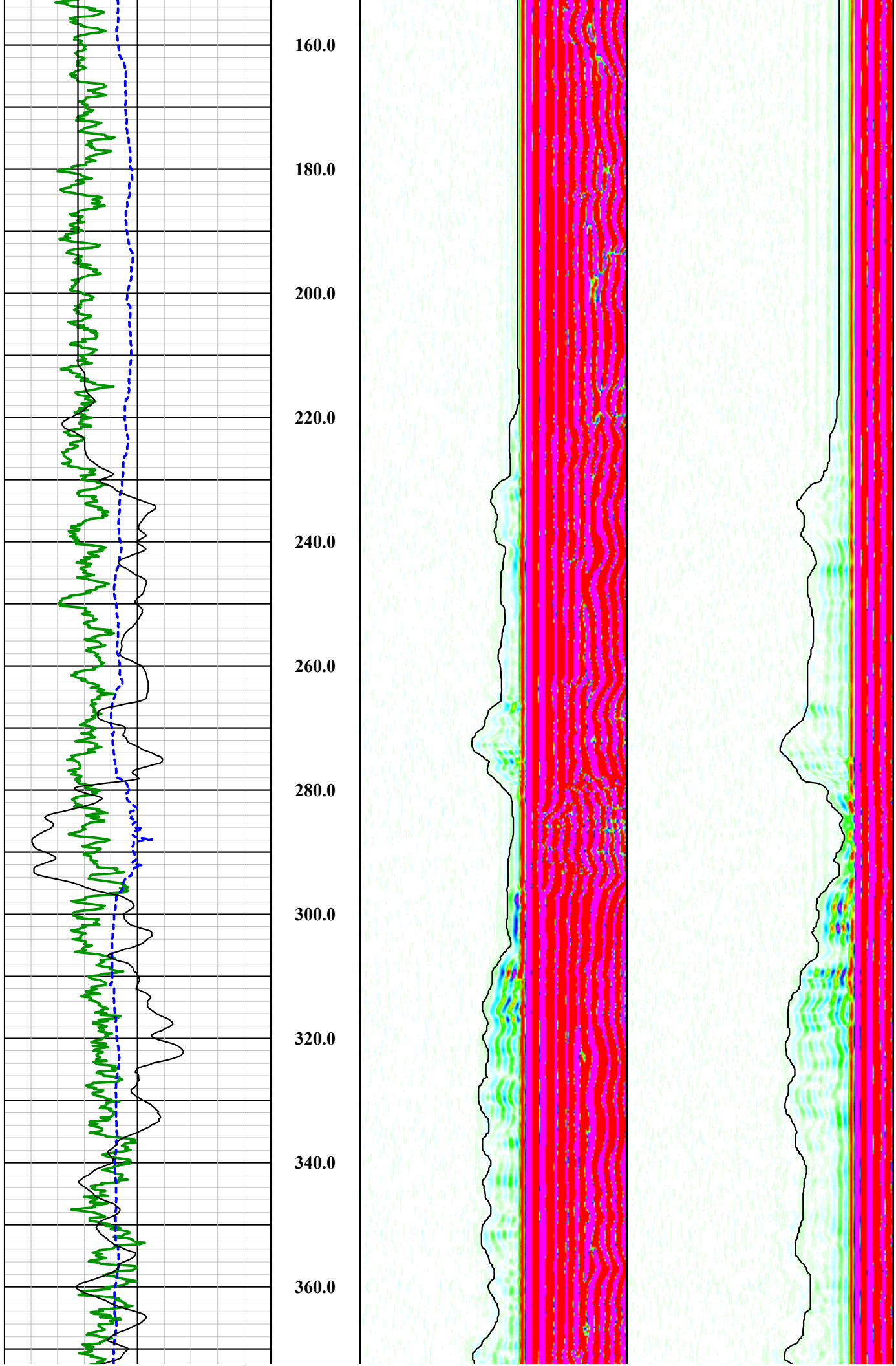
Caliper Arms Used: 15 IN. **Calibration Points:** 8 IN. & 23 IN.

E-Log Calibration Range: 10-1000 OHM-M **Calibration Points:** 10 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

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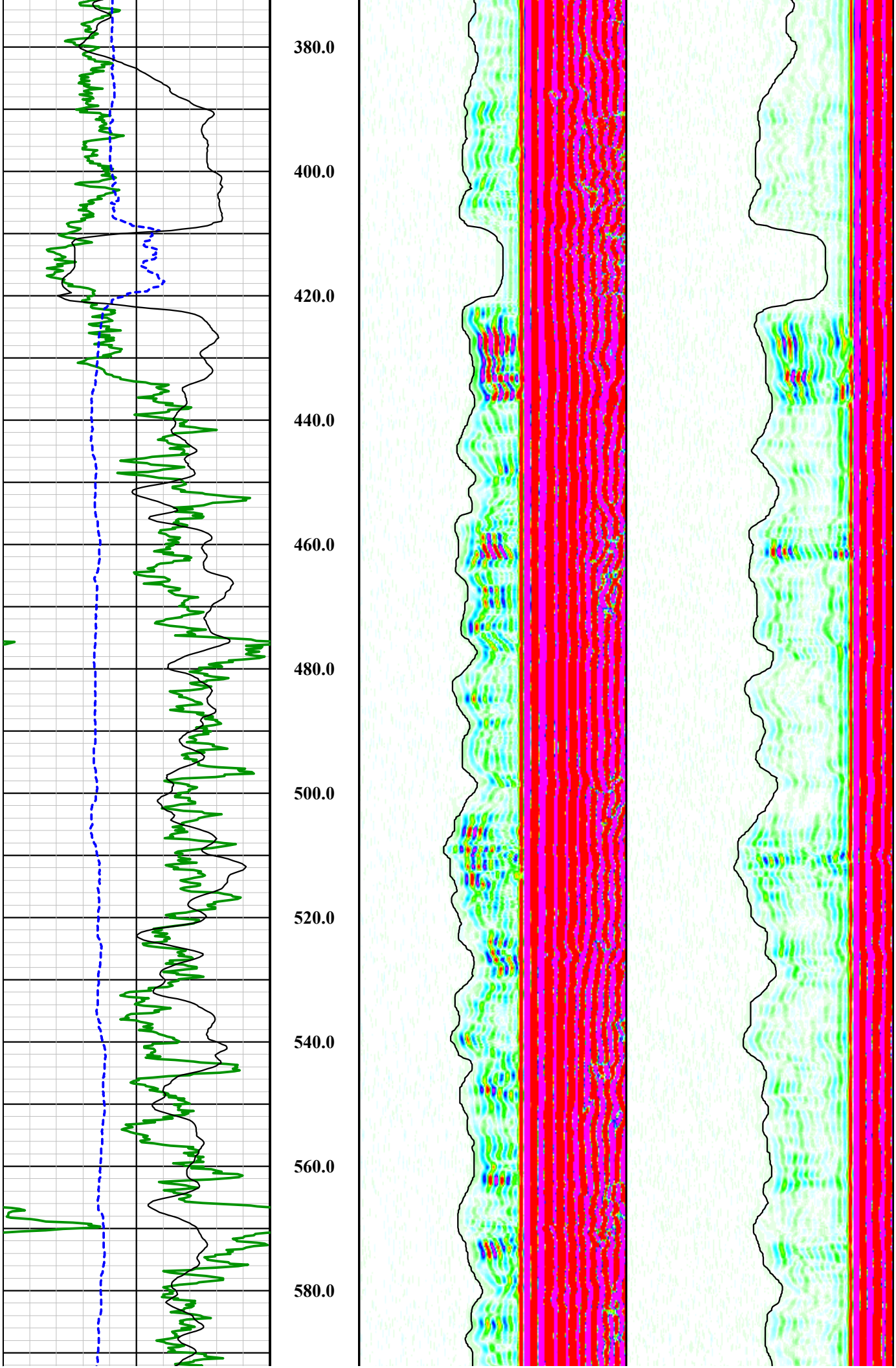
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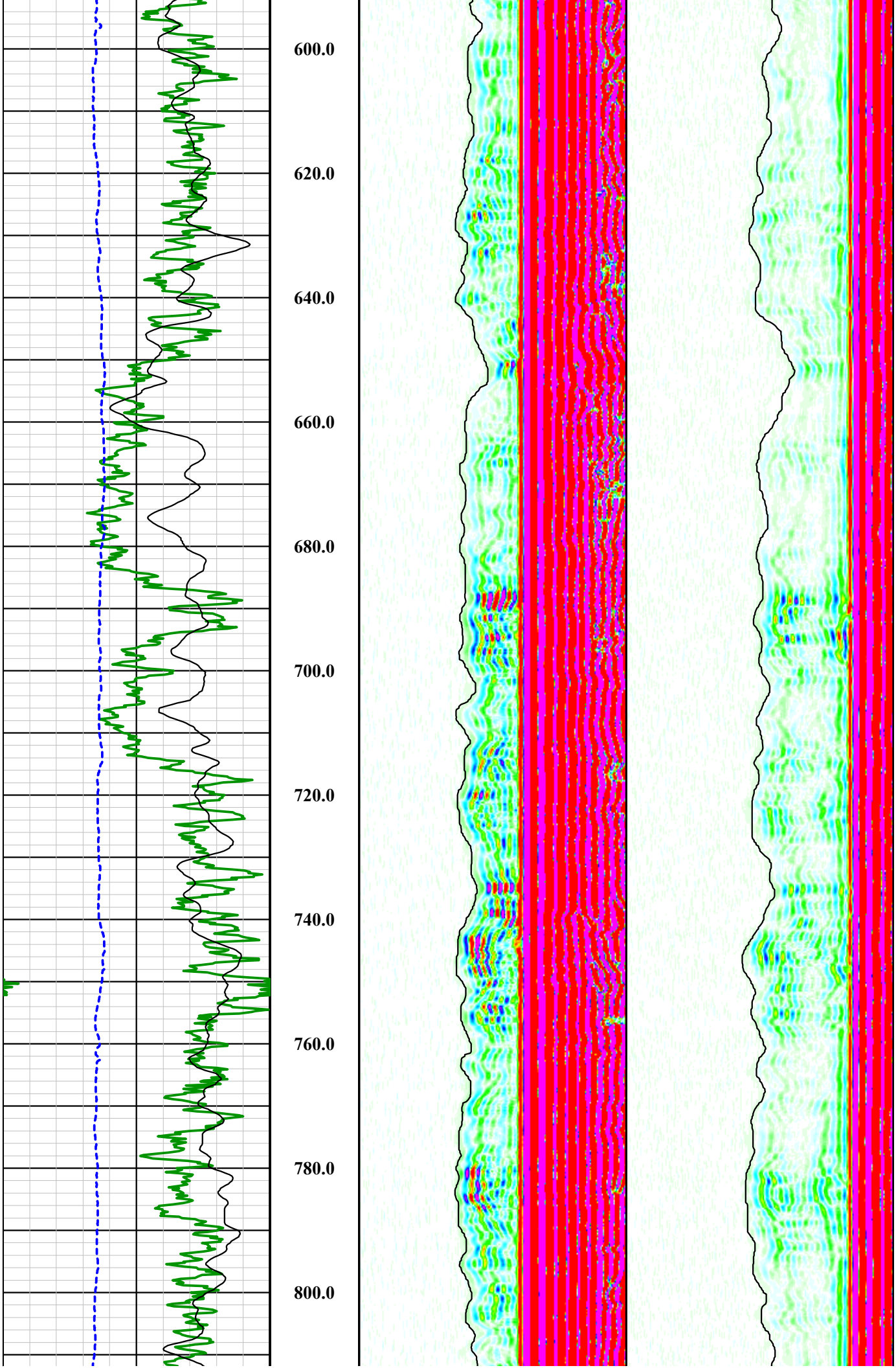
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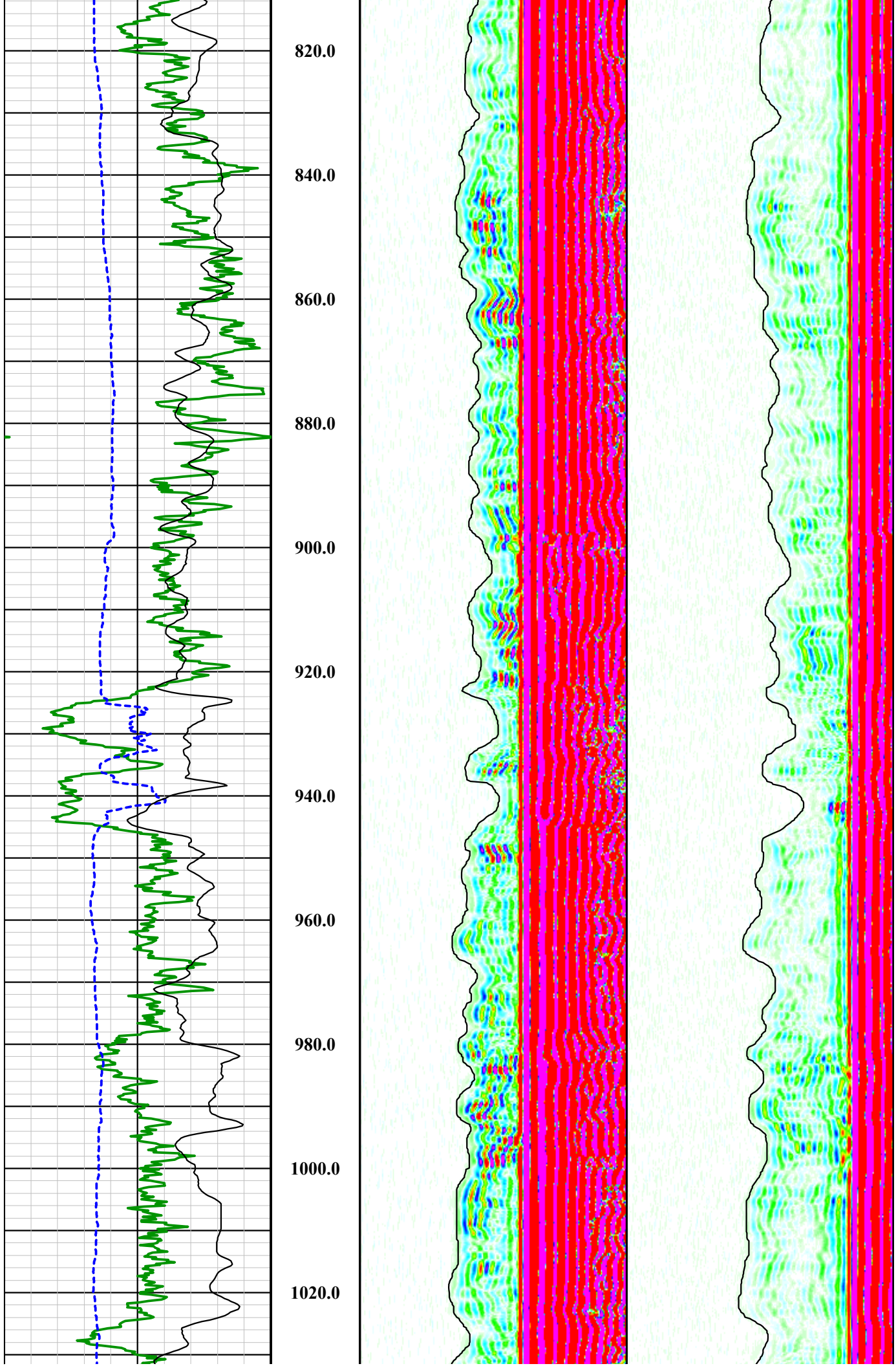
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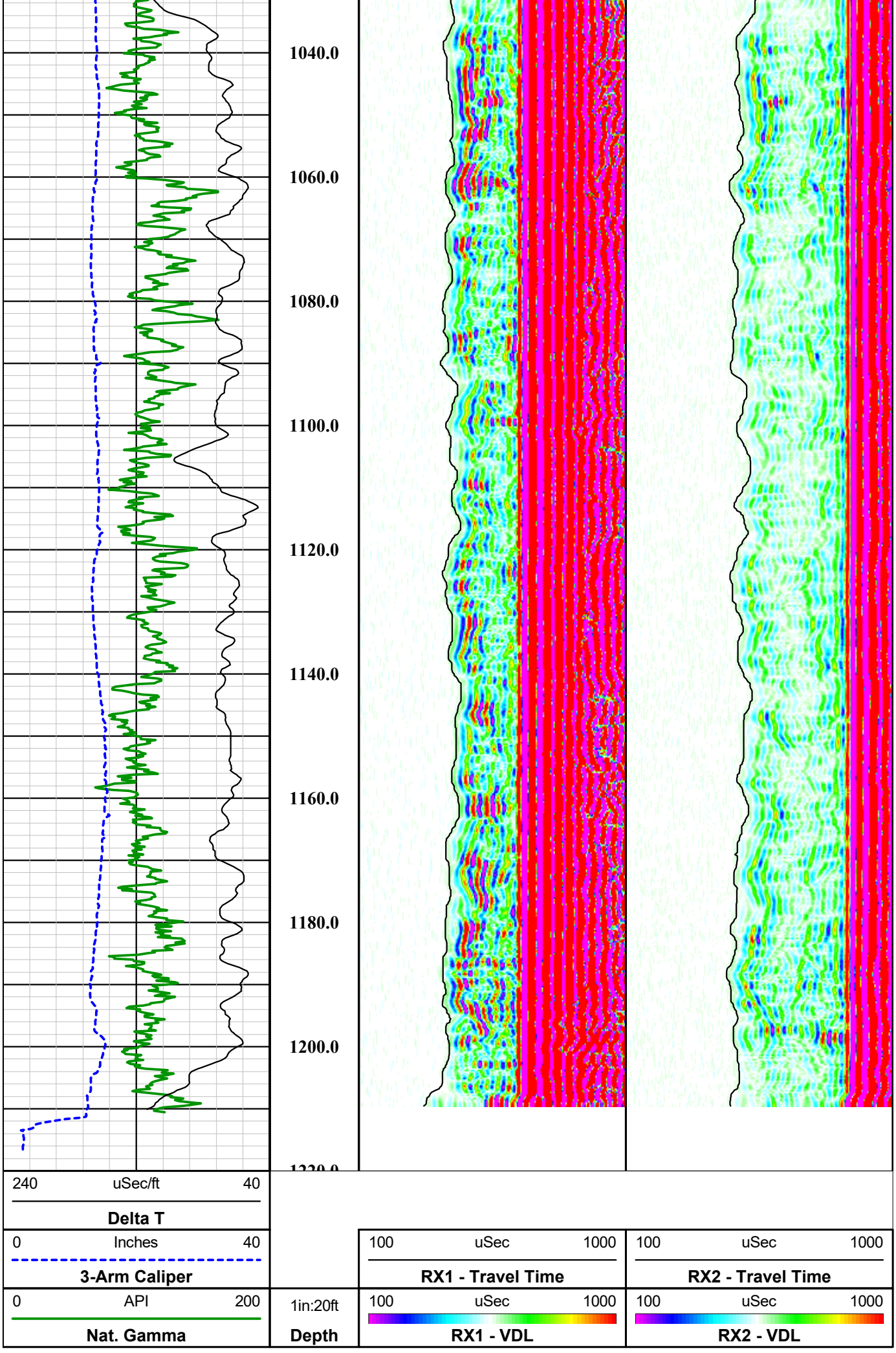
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40
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0
Inches
40
3-Arm Caliper
0
API
200
Nat. Gamma
1in:20ft
Depth
100
uSec
1000
RX1 - Travel Time
100
uSec
1000
RX2 - Travel Time
100
uSec
1000
RX1 - VDL
100
uSec
1000
RX2 - VDL

MSI 60 mm 2 RX Full Waveform Sonic Tool

Probe Top = Depth Ref.

Tool SN: 5001, 5050 & 6003

Four Conductor MSI Probe Top

Probe Length = 2.8 m or 9.19 ft
Probe Weight = ~26.5 kg or 58.4 lbs

Sensors: Ceramic Piezoelectric

Transmitter Frequency: 24 - 28 kHz resonant frequency

Rx - Rx Spacing: 0.3 m (12.0 in)

Typically centralized with external centralizers

Can only be collected in fluid

Temperature Rating: 80 Deg C (176 Deg F)
Presure Rating: 200 bar (2900 psi)

Rx-2 **Tx - Rx2 Spacing = 1.22 m (48.0 in)**

Rx-1 **Tx - Rx1 Spacing = .91 m (36.0 in)**

Acoustic Isolater

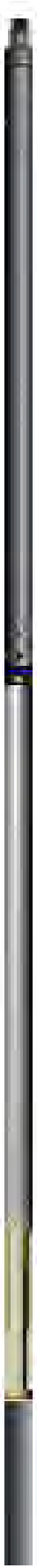
Tx = Acoustic Transmitter

0.660 m or 26.0 in. - End of tool to center of Tx

2.36 in or 60 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	O-02
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final Sonic Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER
WELL ID	O-02
FIELD	FLORENCE COPPER
COUNTY	PINAL
STATE	ARIZONA

TYPE OF LOGS: 3-ARM CALIPER
MORE: W / VOLUME CALC.

LOCATION

SEC TWP RGE

OTHER SERVICES
E-LOG
SONIC
DEVIATION
NAT. GAMMA
TEMPERATURE
FLUID RESISTIVITY

PERMANENT DATUM	ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL	G.L.

DATE	3-5-18	TYPE FLUID IN HOLE	MUD
RUN No	1	MUD WEIGHT	N/A
TYPE LOG	VOLUME CALCULATION	VISCOSITY	N/A
DEPTH-DRILLER	1224 FT.	LEVEL	FULL
DEPTH-LOGGER	1212 FT.	MAX. REC. TEMP.	25.32 DEG. C
BTM LOGGED INTERVAL	1212 FT.	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.2 FT
DRILLER / RIG#	HYDRO RESOURCES	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	A. OLSON / M. QUINONES	TOOL STRING/SN	MSI COMBO TOOL SN 5543
WITNESSED BY	CHAD - H&A	LOG TIME:ON SITE/OFF SITE	10:30 P.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	? IN.	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	40 FT.
2	12 1/4 IN.	40 FT.	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	3-5-18	**Date**	3-5-18	**Date**	3-5-18	**Date**		**Date**	
Run No.	1	**Run No.**	2	**Run No.**	3	**Run No.**	4	**Run No.**	5
Tool Model	MSI COMBO TOOL	**Tool Model**	GEOVISTA E-LOG	**Tool Model**	MSI 60MM SONIC	**Tool Model**	MSI DEVIATION	**Tool Model**	
Tool SN	5543	**Tool SN**	4035	**Tool SN**	5050	**Tool SN**	6002	**Tool SN**	
From	SURFACE	**From**	SURFACE	**From**	SURFACE	**From**	SURFACE	**From**	
To	1212 FT.	**To**	1212 FT.	**To**	1212 FT.	**To**	1212 FT.	**To**	
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	
Truck No	900	**Truck No**	900	**Truck No**	900	**Truck No**	900	**Truck No**	
Operation Check	3-4-18	**Operation Check**	3-4-18	**Operation Check**	3-4-18	**Operation Check**	3-4-18	**Operation Check**	
Calibration Check	3-4-18	**Calibration Check**	3-4-18	**Calibration Check**	N/A	**Calibration Check**	N/A	**Calibration Check**	
Time Logged	10:40 P.M.	**Time Logged**	11:40 P.M.	**Time Logged**	12:15 A.M.	**Time Logged**	1:00 A.M.	**Time Logged**	

Additional Comments:

Caliper Arms Used: 15 IN. **Calibration Points:** 8 IN. & 23 IN.

E-Log Calibration Range: 10-1000 OHM-M **Calibration Points:** 10 & 1000 OHM-M

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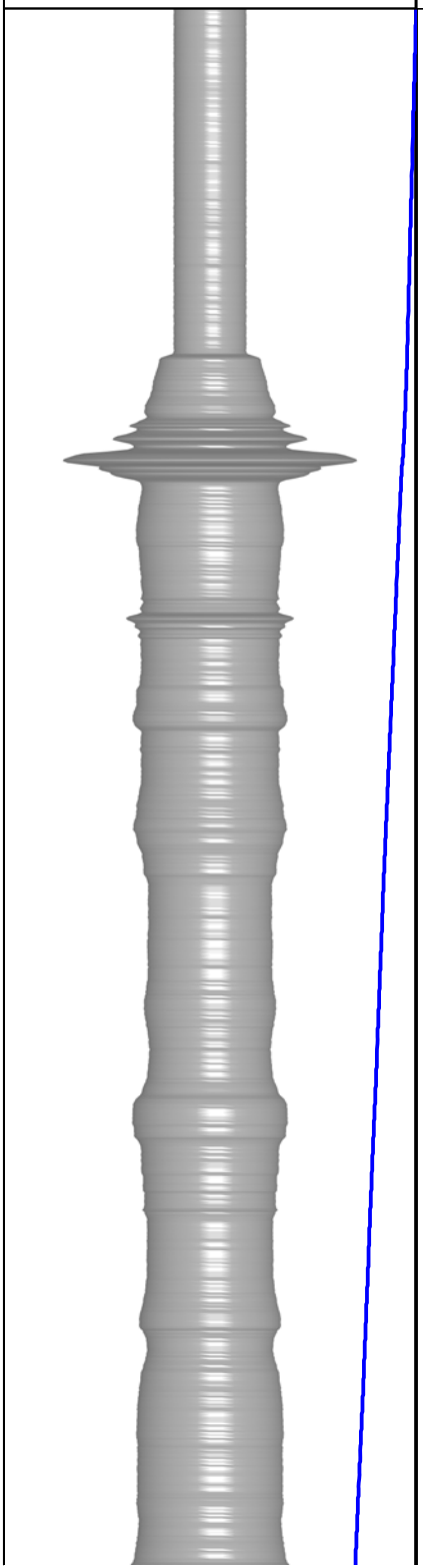
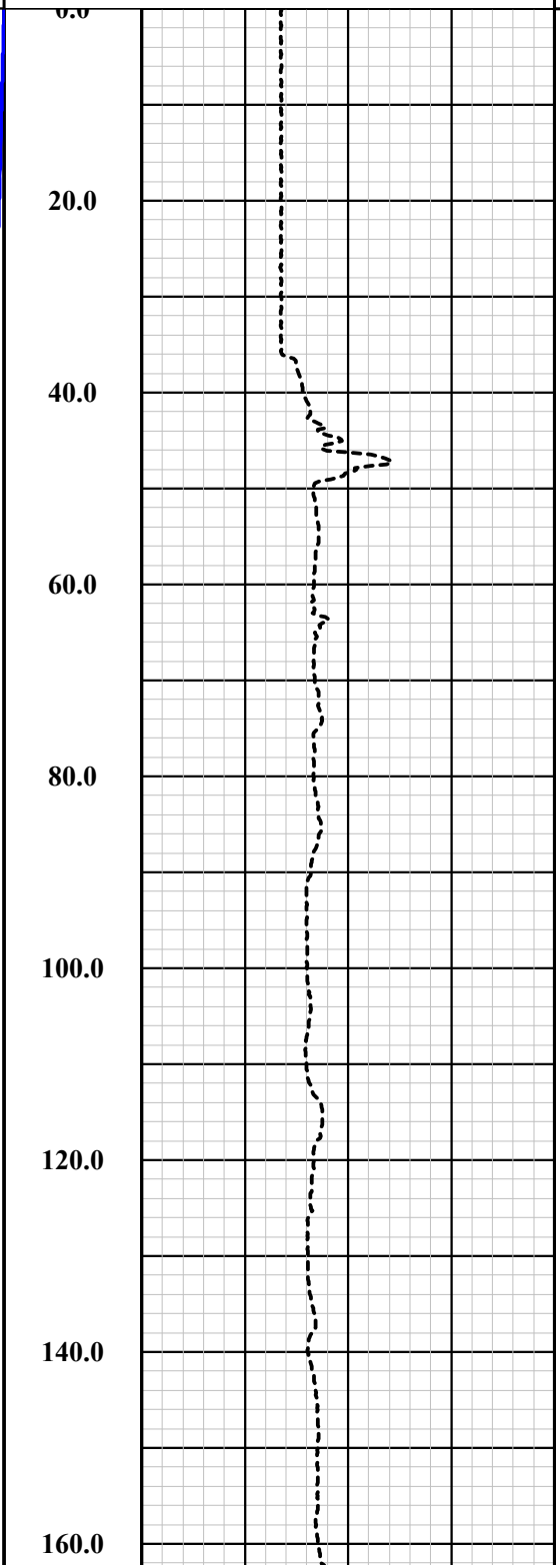
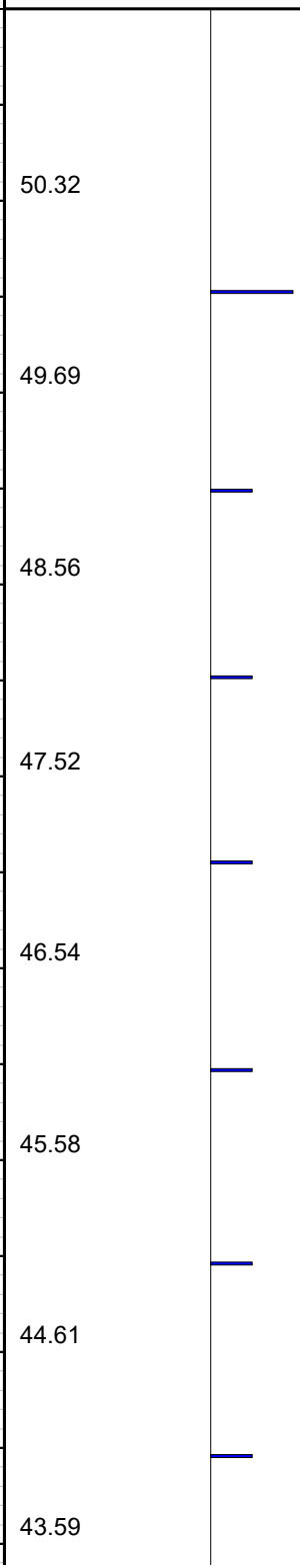
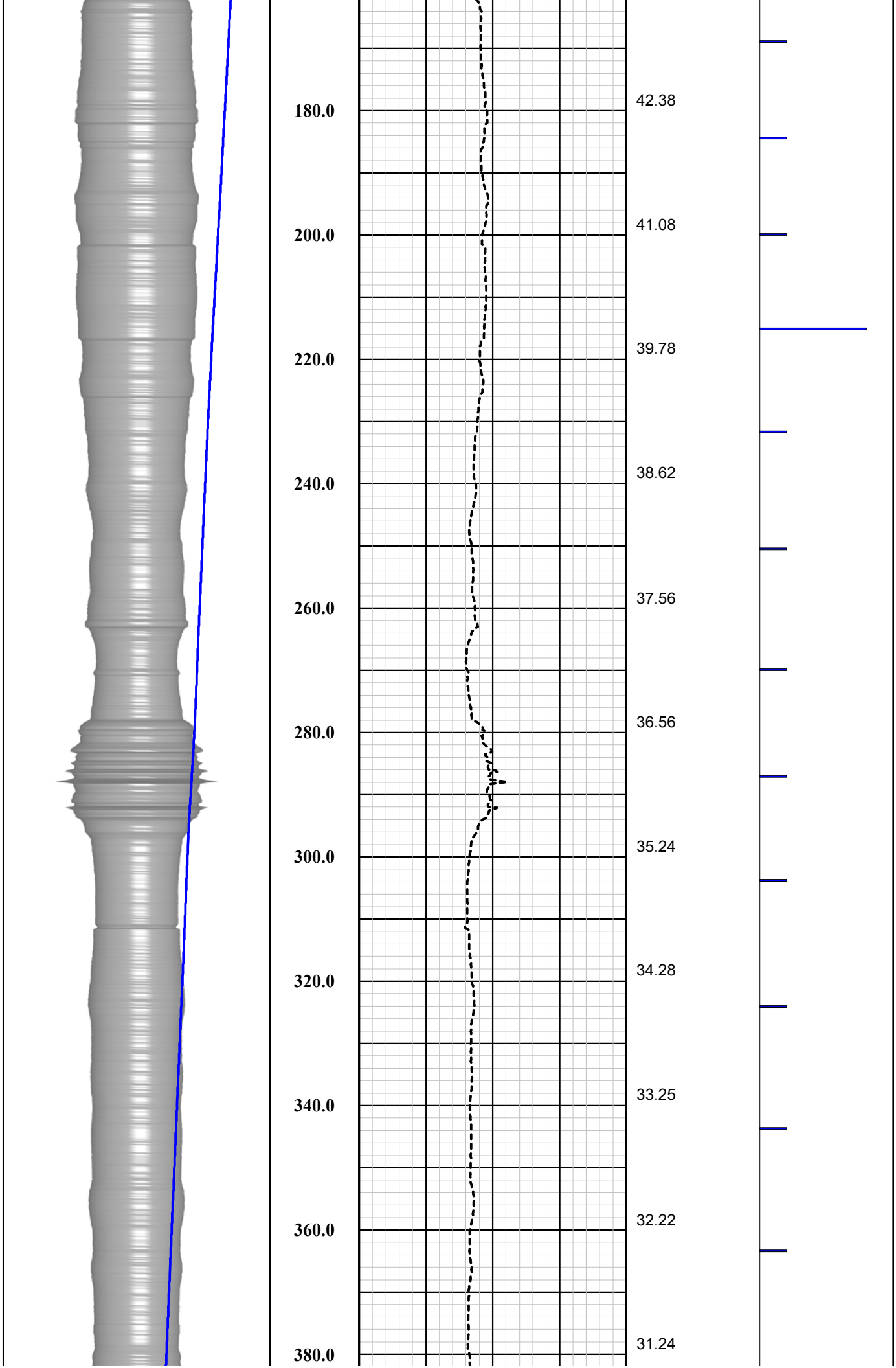
Total Volume	Depth	3-Arm Caliper	Cumulated Volume (cu.yd)
0 cu.yd 50.88	1in:20ft	0 Inches 40	
3-D View			Based on 5.5" OD Casing
-0°			





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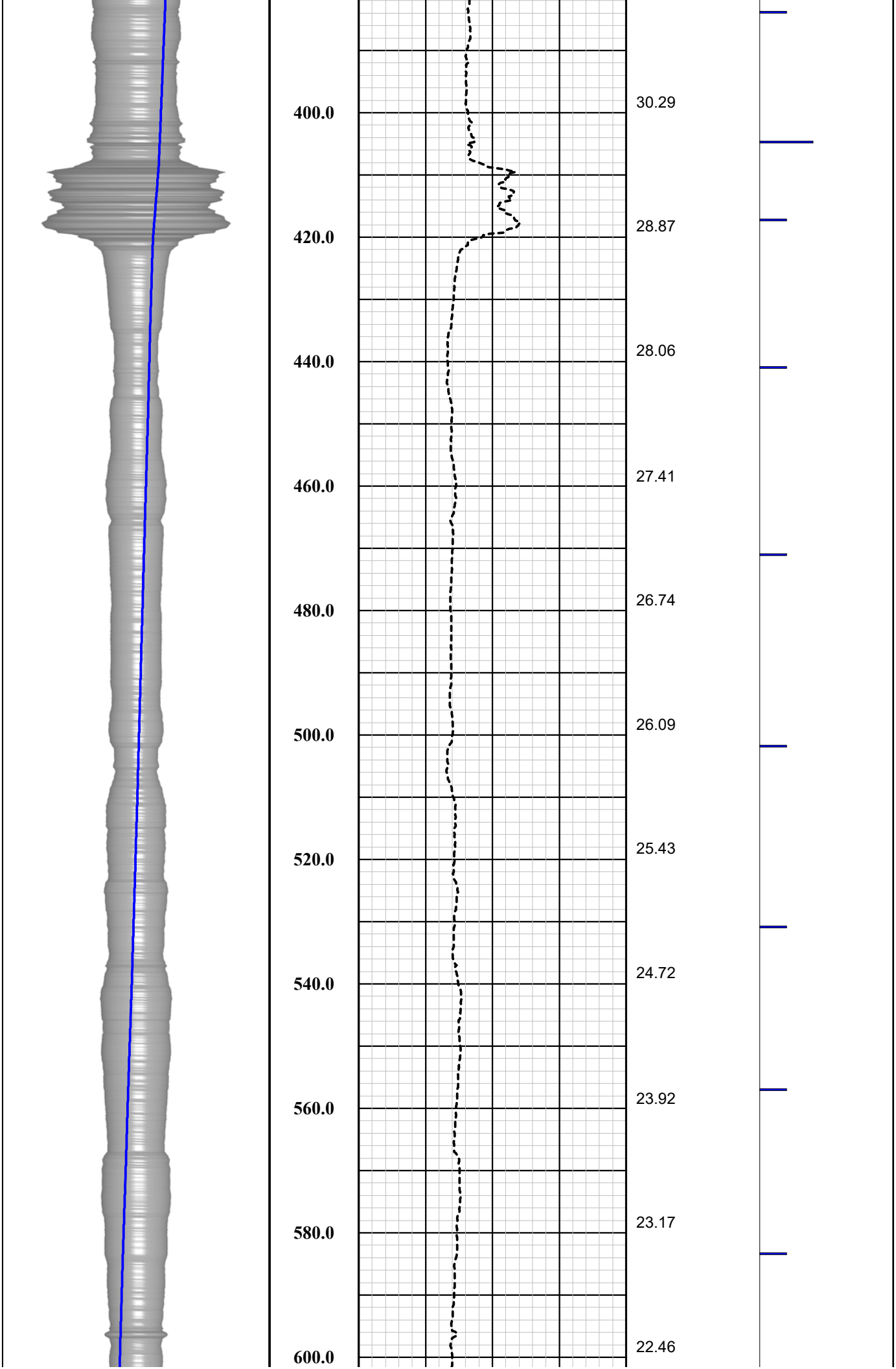
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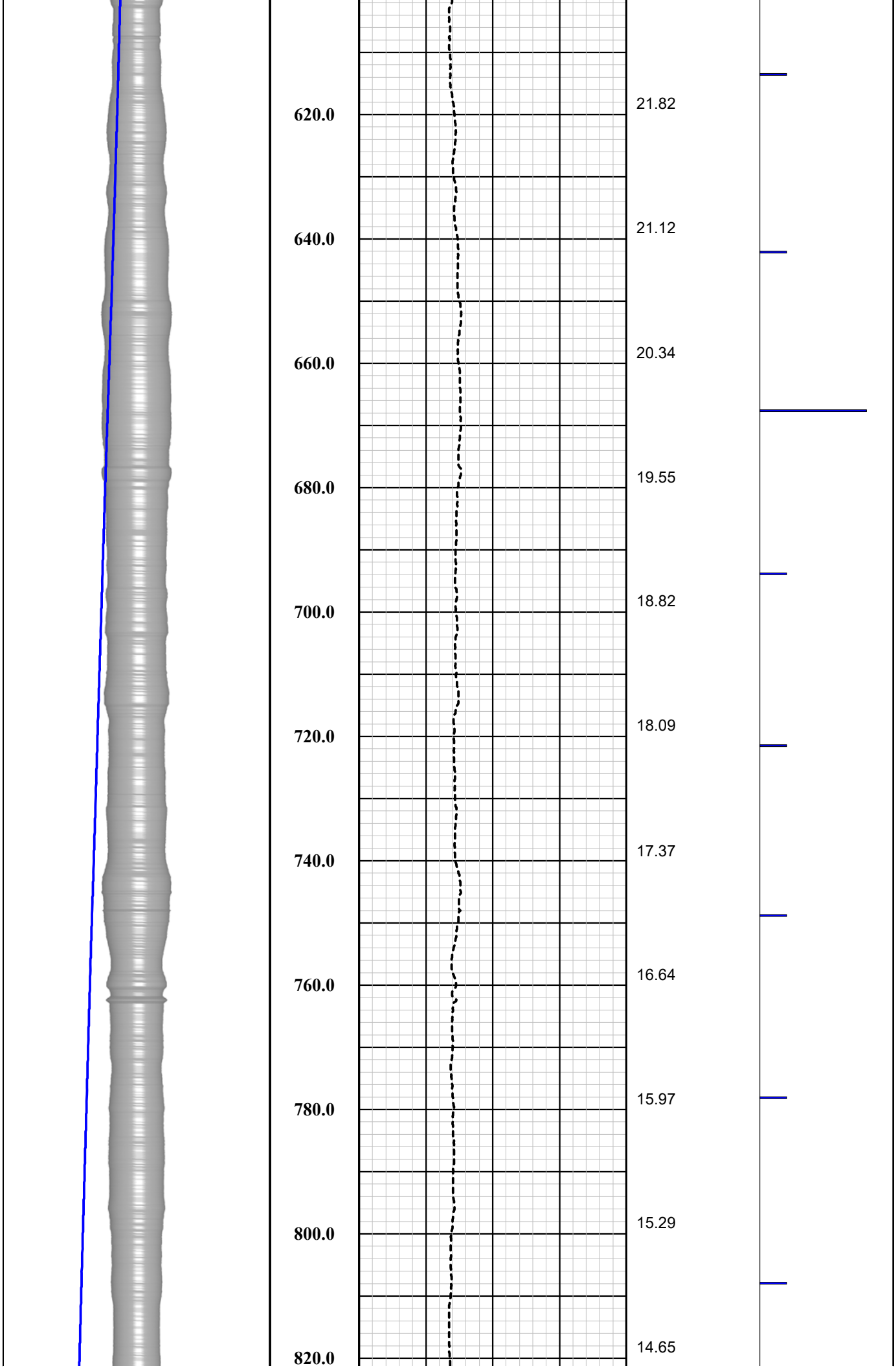
22.46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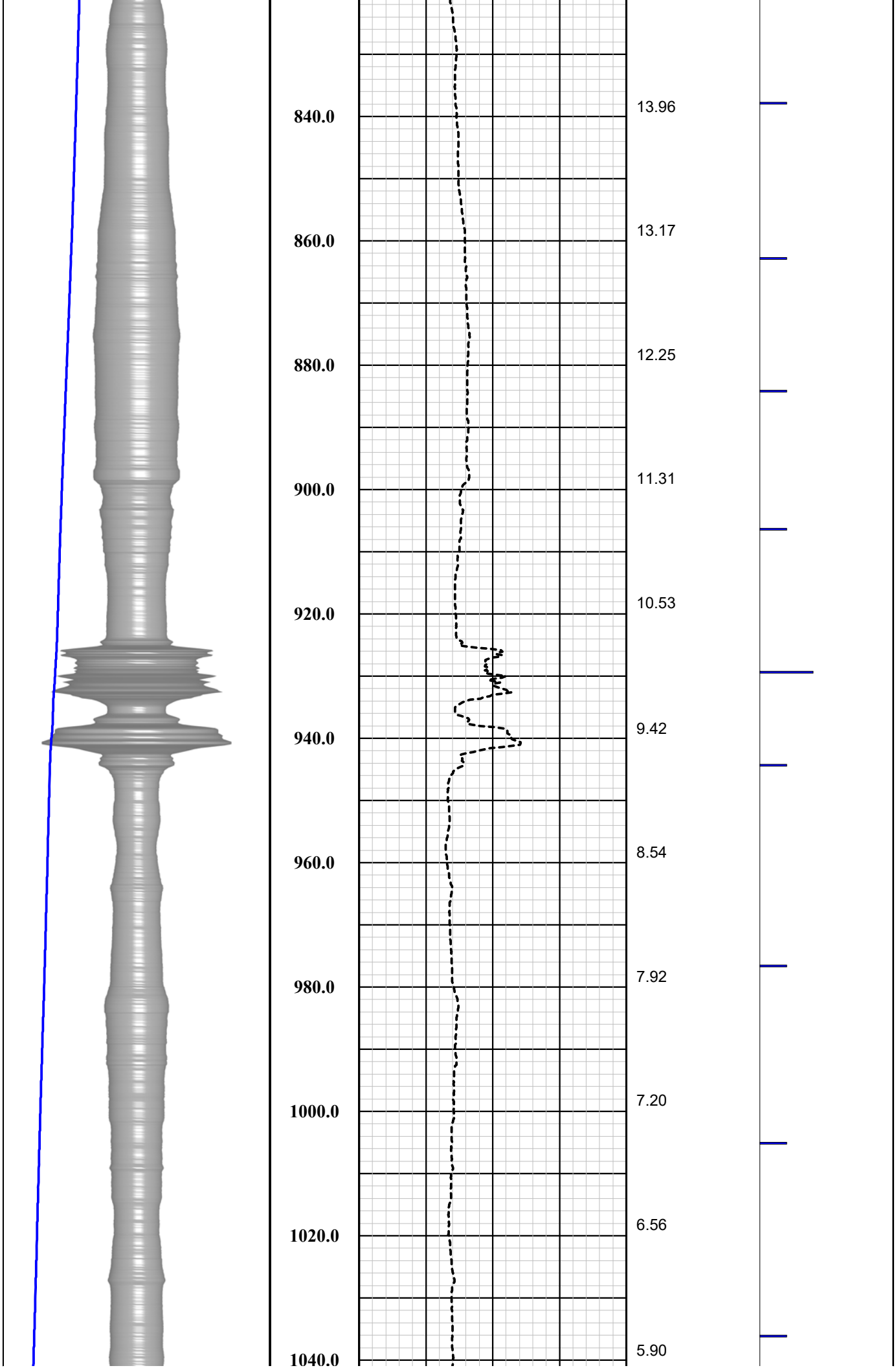
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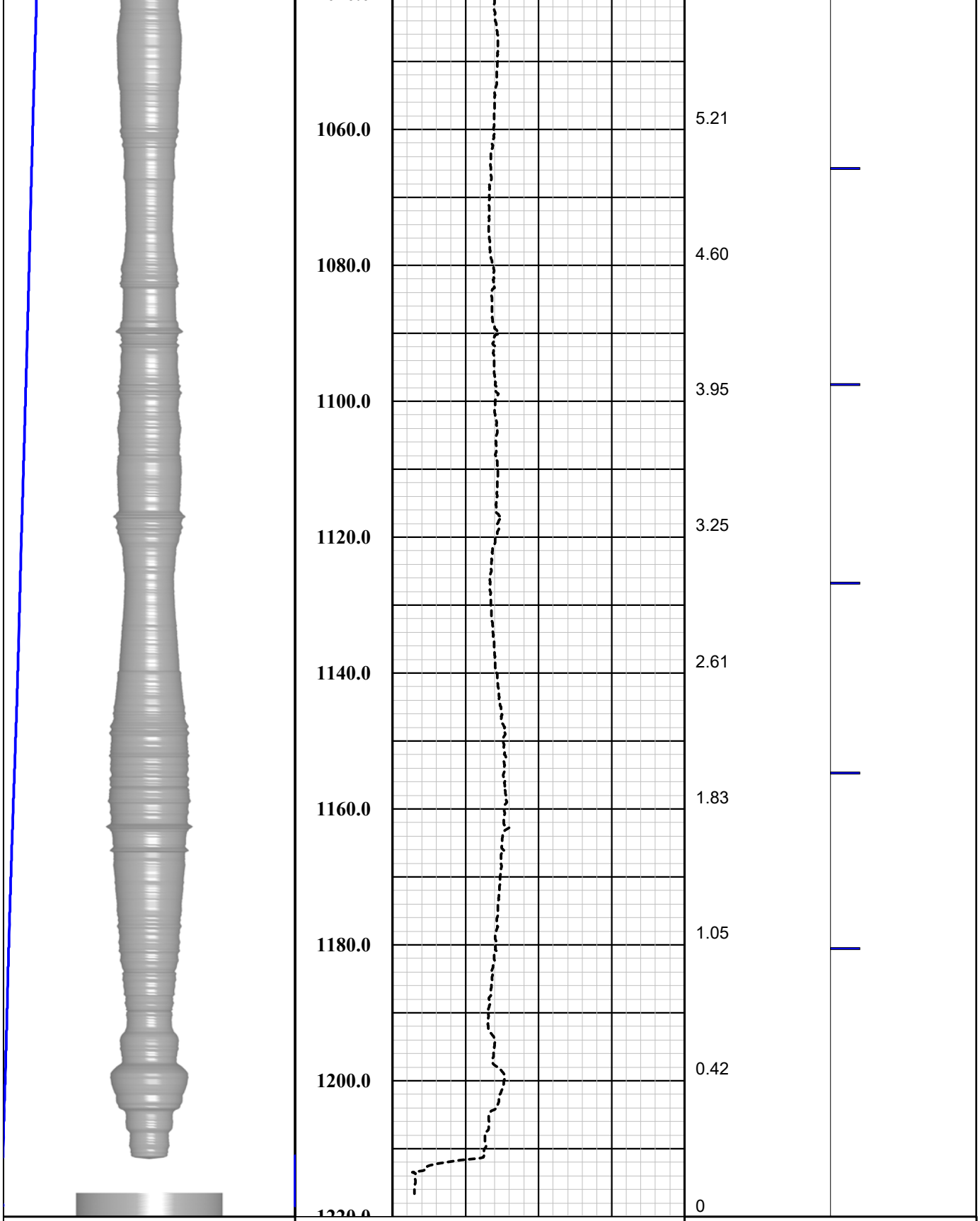
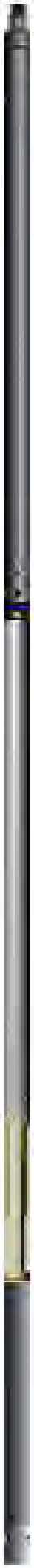


MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
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1.375" or 34.9 mm Diameter

	Company	FLORENCE COPPER

Southwest Exploration Services, LLC

borehole geophysics & video services

Well	O-02
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final Caliper w / Volume Calculation Summary

Drift Report

Wellbore DRIFT Interpretation

PREPARED ESPECIALLY FOR

FLORENCE COPPER

O-02

Tuesday - March 6, 2018

Southwest Exploration Services, LLC
borehole geophysics and video services

Southwest Exploration Services, LLC
(480) 926-4558

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC

(480) 926-4558

Company: FLORENCE COPPER **Well Owner:**

County: PINAL **State:** Arizona **Country:** United States

Well Number: O-02 **Survey Date:** Tuesday - March 6, 2018 **Magnetic Declination:** Declination Correction Not Used

Field: FLORENCE COPPER **Drift Calculation Methodology:** Balanced Tangential Method

Location:

Remarks:

Witness: CHAD - H&A **Vehicle No.:** 900 **Invoice No.:** **Operator:** A. OLSON **Well Depth:** 1212 Feet **Casing size:** 5 Inches

Tool: Compass - 6002 **Lat.:** **Long.:** **Sec.:** **Twp.:** **Rge.:**

MEASURED DATA			DATA COMPUTATIONS						
DEPTHS, feet	INCLINATIONS, degrees	AZIMUTHS, degrees	TVD, feet	T. LATITUDE, feet	T. LONGITUDE, feet	DOGLEG SEV., degrees per 20 Feet	DOGLEG SEV., degrees per 100 feet	DRIFT DIST., feet	DRIFT BGR., degrees
0	2.03	021.58	0.00						
20	0.67	226.56	19.99	0.249	0.045	1.00	8.45	0.25' (3.00")	010.30
40	0.20	276.78	39.98	0.173	-0.075	0.41	3.67	0.19' (2.28")	336.60
60	0.23	061.34	59.97	0.196	-0.074	0.96	8.25	0.21' (2.52")	339.20
80	0.23	028.82	79.96	0.250	-0.019	0.84	2.42	0.25' (3.00")	355.60
100	0.21	028.20	99.96	0.317	0.018	0.42	0.05	0.32' (3.84")	003.20
120	0.54	049.38	119.95	0.411	0.107	0.13	1.59	0.42' (5.04")	014.60
140	0.08	263.89	139.94	0.471	0.165	0.43	8.27	0.50' (6.00")	019.30
160	0.13	011.61	159.93	0.492	0.156	0.83	6.99	0.52' (6.24")	017.60
180	0.22	009.31	179.92	0.552	0.167	0.95	0.17	0.58' (6.96")	016.80
200	0.15	309.68	199.91	0.607	0.153	0.37	4.30	0.63' (7.56")	014.20
220	0.36	344.20	219.90	0.684	0.116	1.00	2.57	0.69' (8.28")	009.60
240	0.62	326.72	239.89	0.835	0.040	1.00	1.32	0.84' (10.08")	002.70
260	0.46	339.83	259.88	1.001	-0.047	0.34	0.99	1.00' (12.00")	357.30
280	0.20	135.69	279.87	1.051	-0.050	0.93	8.46	1.05' (12.60")	357.30
300	0.58	332.86	299.86	1.116	-0.072	0.78	8.56	1.12' (13.44")	356.30
320	0.51	012.34	319.85	1.293	-0.099	0.53	2.92	1.30' (15.60")	355.60
340	0.52	001.95	339.84	1.471	-0.077	0.00	0.78	1.47' (17.64")	357.00

True Vertical Depth: 1210.90' **Final Drift Distance:** 1.46' (17.52") **Final Drift Bearing:** 257.40°

Note: Magnetic Declination is not used because it is not a factor in the calculation of well drift or alignment. Magnetic Declination is only important if attempting to hit a target or miss another well and then it is included in the calculations.

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC

O-02

(480) 926-4558

MEASURED DATA			DATA COMPUTATIONS						
DEPTHS, feet	INCLINATIONS, degrees	AZIMUTHS, degrees	TVD, feet	T. LATITUDE, feet	T. LONGITUDE, feet	DOGLEG SEV., degrees per 20 Feet	DOGLEG SEV., degrees per 100 feet	DRIFT DIST., feet	DRIFT BRG., degrees
360	0.54°	344.39°	359.83	1.652	-0.099	0.56	1.32	1.66' (19.92")	356.60
380	0.38°	341.45°	379.82	1.806	-0.145	0.73	0.22	1.81' (21.72")	355.40
400	0.57°	006.96°	399.81	1.968	-0.154	0.88	1.91	1.97' (23.64")	355.50
420	0.42°	303.14°	419.80	2.107	-0.203	0.20	4.58	2.12' (25.44")	354.50
440	0.44°	327.08°	439.79	2.212	-0.306	0.97	1.80	2.23' (26.76")	352.10
460	0.18°	224.42°	459.78	2.254	-0.370	0.96	6.76	2.28' (27.36")	350.70
480	0.02°	083.35°	479.77	2.232	-0.389	0.12	8.16	2.27' (27.24")	350.10
500	0.52°	020.09°	499.76	2.318	-0.354	0.81	4.54	2.34' (28.08")	351.30
520	0.12°	312.06°	519.75	2.417	-0.338	0.59	4.84	2.44' (29.28")	352.00
540	0.13°	139.33°	539.74	2.414	-0.339	0.73	8.64	2.44' (29.28")	352.00
560	0.14°	261.93°	559.73	2.393	-0.348	0.28	7.59	2.42' (29.04")	351.70
580	0.07°	162.14°	579.72	2.378	-0.368	0.77	6.62	2.41' (28.92")	351.20
600	0.47°	178.47°	599.71	2.284	-0.362	0.49	1.23	2.31' (27.72")	351.00
620	0.16°	341.89°	619.70	2.229	-0.368	0.69	8.57	2.26' (27.12")	350.60
640	0.18°	015.76°	639.69	2.286	-0.368	0.13	2.52	2.32' (27.84")	350.90
660	0.19°	249.09°	659.68	2.304	-0.390	0.83	7.74	2.34' (28.08")	350.40
680	0.69°	306.57°	679.67	2.364	-0.518	0.80	4.16	2.42' (29.04")	347.60
700	0.23°	237.52°	699.66	2.414	-0.649	0.25	4.91	2.50' (30.00")	345.00
720	0.34°	138.63°	719.65	2.348	-0.644	0.54	6.58	2.43' (29.16")	344.70
740	0.18°	238.15°	739.64	2.287	-0.631	0.24	6.61	2.37' (28.44")	344.60
760	0.19°	218.38°	759.63	2.244	-0.678	0.94	1.49	2.34' (28.08")	343.20
780	0.36°	247.18°	779.62	2.194	-0.757	0.65	2.15	2.32' (27.84")	341.00
800	0.21°	171.62°	799.61	2.133	-0.810	0.97	5.30	2.28' (27.36")	339.20
820	0.38°	207.85°	819.60	2.038	-0.836	0.06	2.69	2.20' (26.40")	337.70
840	0.55°	153.49°	839.59	1.893	-0.824	0.29	3.95	2.07' (24.84")	336.50
860	0.60°	141.09°	859.58	1.726	-0.715	0.57	0.93	1.87' (22.44")	337.50
880	0.48°	140.70°	879.57	1.580	-0.596	0.47	0.03	1.69' (20.28")	339.30
900	1.03°	188.03°	899.56	1.337	-0.568	0.42	3.47	1.45' (17.40")	337.00
920	0.75°	120.84°	919.55	1.092	-0.481	0.69	4.79	1.19' (14.28")	336.20
940	2.50°	114.18°	939.53	0.846	0.029	0.02	0.52	0.85' (10.20")	002.00
960	0.14°	014.58°	959.52	0.691	0.433	0.34	6.61	0.82' (9.84")	032.10
980	0.26°	006.16°	979.51	0.760	0.444	0.97	0.64	0.88' (10.56")	030.30
1,000	0.03°	271.07°	999.51	0.805	0.444	0.96	6.39	0.92' (11.04")	028.90

True Vertical Depth: 1210.90' **Final Drift Distance: 1.46' (17.52")** **Final Drift Bearing: 257.40°**

WELLBORE DRIFT INTERPRETATION

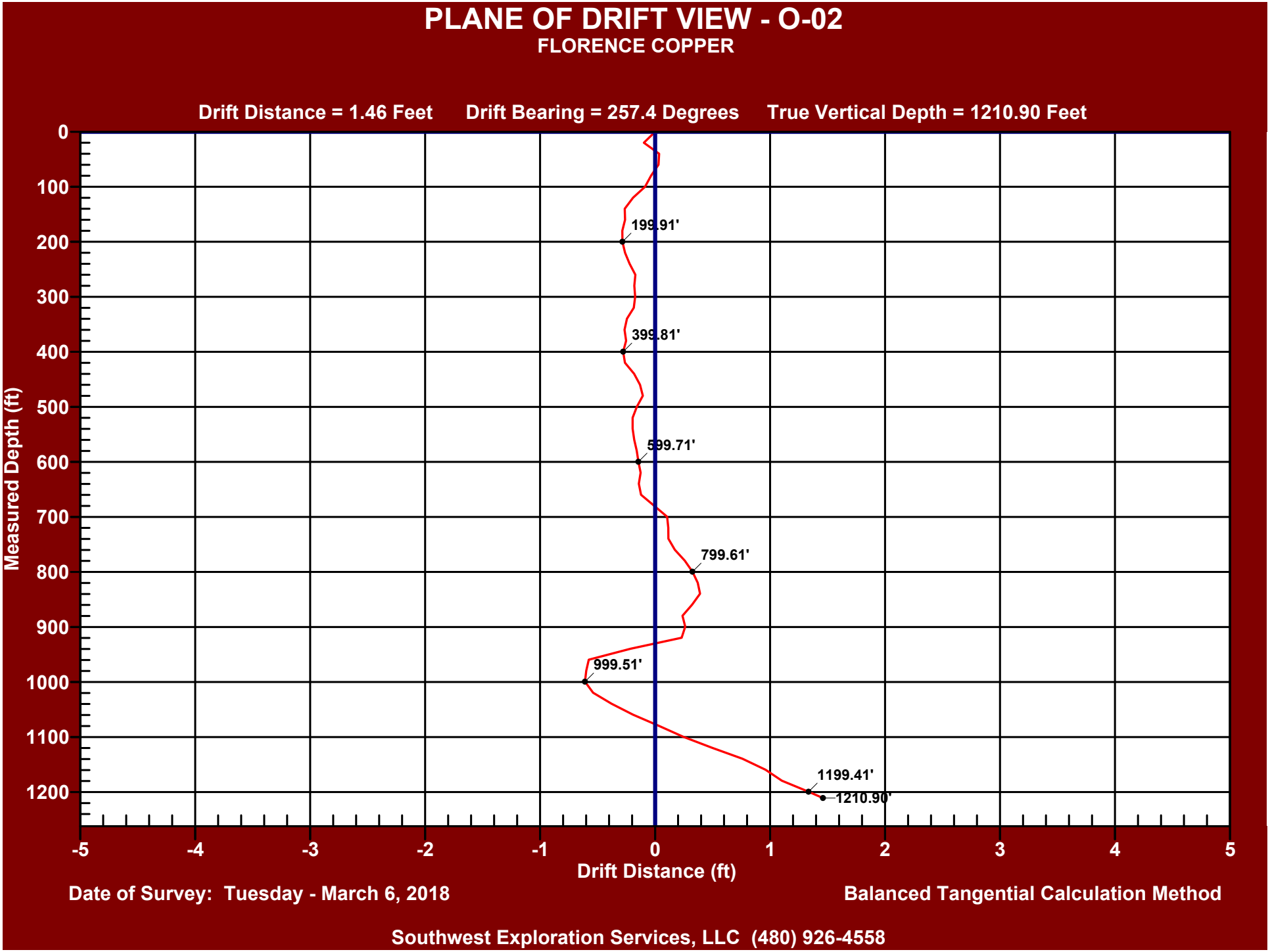
Southwest Exploration Services, LLC

O-02

(480) 926-4558

MEASURED DATA			DATA COMPUTATIONS						
DEPTHS, feet	INCLINATIONS, degrees	AZIMUTHS, degrees	TVD, feet	T. LATITUDE, feet	T. LONGITUDE, feet	DOGLEG SEV., degrees per 20 Feet	DOGLEG SEV., degrees per 100 feet	DRIFT DIST., feet	DRIFT BRG., degrees
1,020	0.39°	269.84°	1,019.50	0.805	0.371	0.95	0.10	0.89' (10.68")	024.70
1,040	0.57°	236.32°	1,039.49	0.750	0.220	0.51	2.50	0.78' (9.36")	016.40
1,060	0.55°	263.86°	1,059.48	0.685	0.042	0.30	2.06	0.69' (8.28")	003.50
1,080	0.72°	255.66°	1,079.47	0.644	-0.175	0.94	0.62	0.67' (8.04")	344.80
1,100	0.59°	226.01°	1,099.46	0.541	-0.371	0.15	2.21	0.66' (7.92")	325.60
1,120	0.93°	251.81°	1,119.45	0.419	-0.599	0.21	1.93	0.73' (8.76")	304.90
1,140	0.59°	262.75°	1,139.44	0.355	-0.855	0.99	0.83	0.93' (11.16")	292.60
1,160	0.80°	215.47°	1,159.43	0.228	-1.038	0.59	3.47	1.06' (12.72")	282.40
1,180	0.43°	197.17°	1,179.42	0.043	-1.141	0.83	1.38	1.14' (13.68")	272.10
1,200	1.27°	228.86°	1,199.41	-0.175	-1.330	0.61	2.36	1.34' (16.08")	262.50
1,212	0.59°	180.17°	1,210.90	-0.318	-1.426	0.51	6.21	1.46' (17.52")	257.40

Page No. 3 **True Vertical Depth: 1210.90'** **Final Drift Distance: 1.46' (17.52")** **Final Drift Bearing: 257.40°**

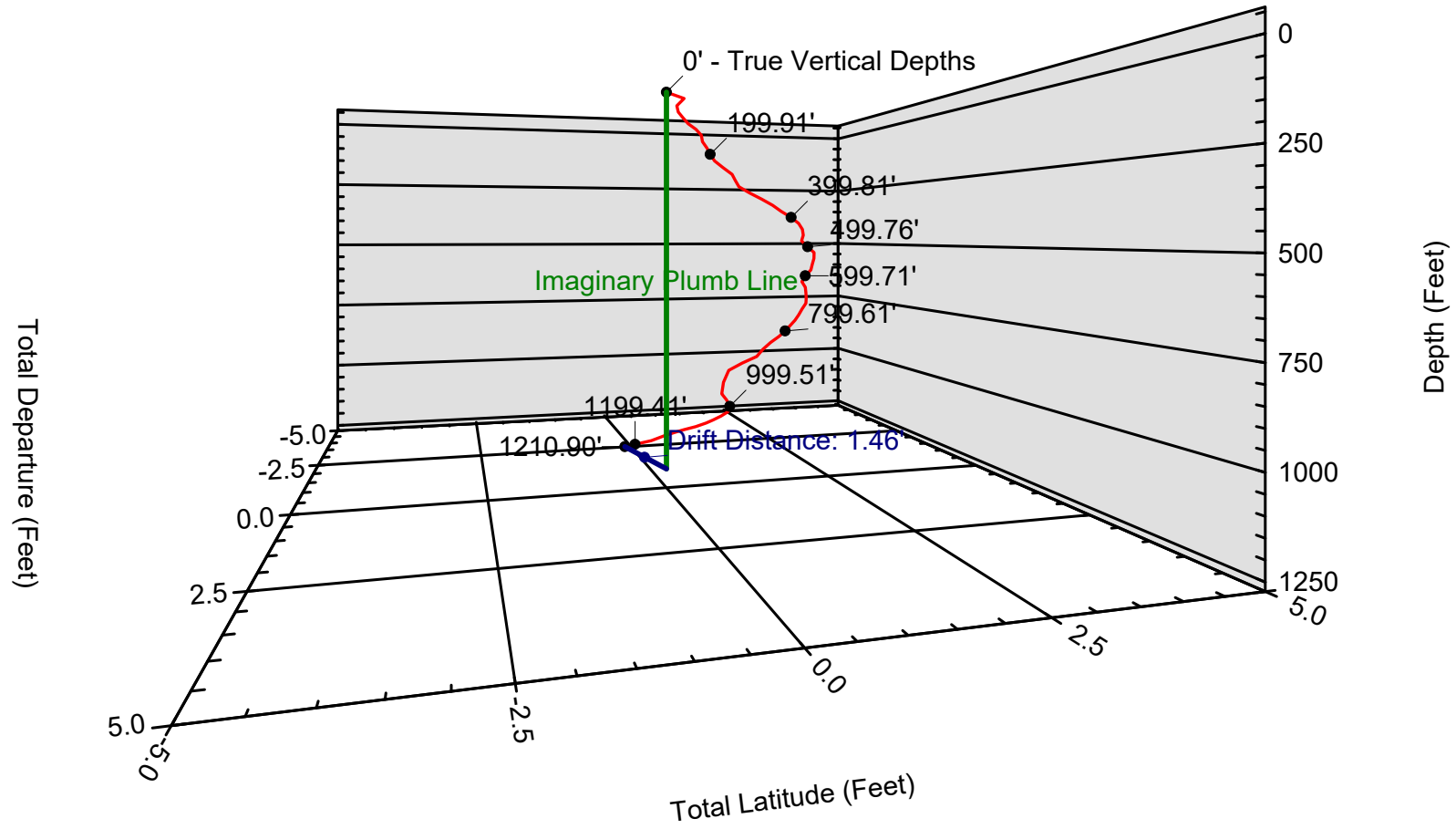

PLANE OF DRIFT VIEW - O-02
FLORENCE COPPER
Drift Distance = 1.46 Feet
Drift Bearing = 257.4 Degrees
True Vertical Depth = 1210.90 Feet
Measured Depth (ft)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
199.91'
399.81'
599.71'
799.61'
999.51'
1199.41'
1210.90'
-5
-4
-3
-2
-1
0
1
2
3
4
5
Drift Distance (ft)
Date of Survey: Tuesday - March 6, 2018
Balanced Tangential Calculation Method
Southwest Exploration Services, LLC (480) 926-4558

3D PROJECTION VIEW - O-02

FLORENCE COPPER

Drift Distance = 1.46 Feet **Drift Bearing = 257.4 Degrees** **True Vertical Depth = 1210.90 Feet**

256.0



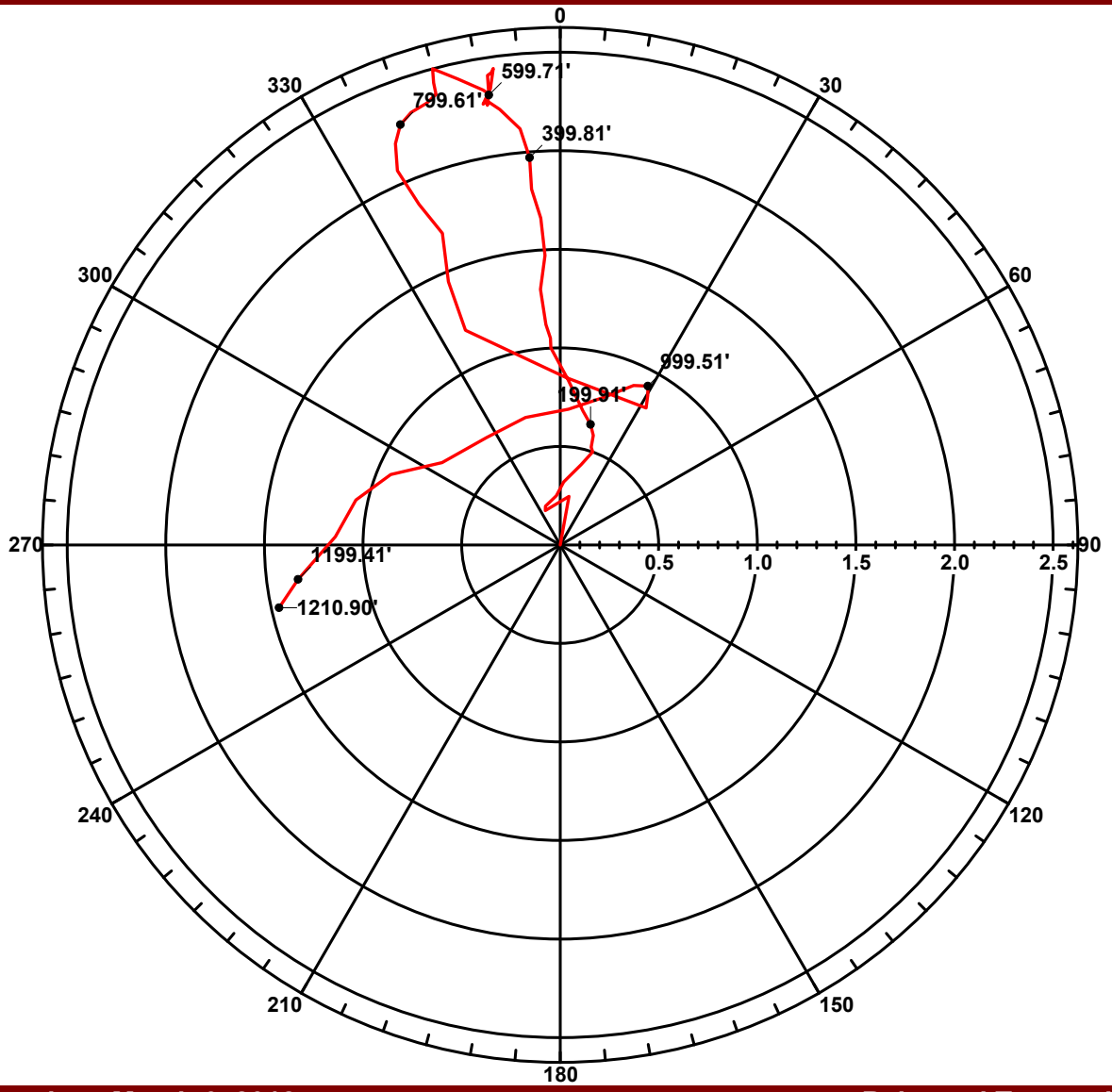
Date of Survey: Tuesday - March 6, 2018 **Balanced Tangential Calculation Method**

Southwest Exploration Services, LLC (480) 926-4558

POLAR VIEW - O-02

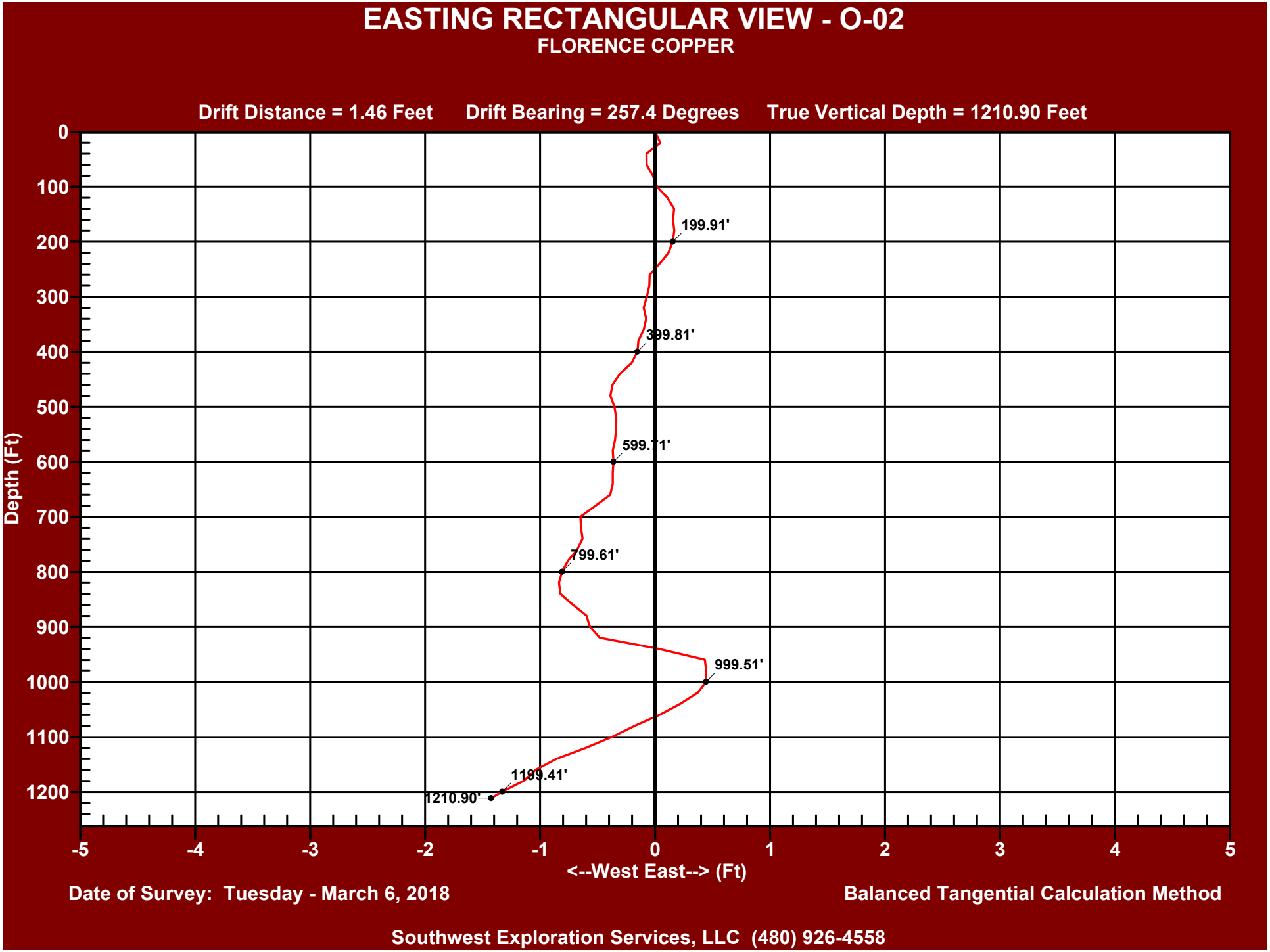
FLORENCE COPPER

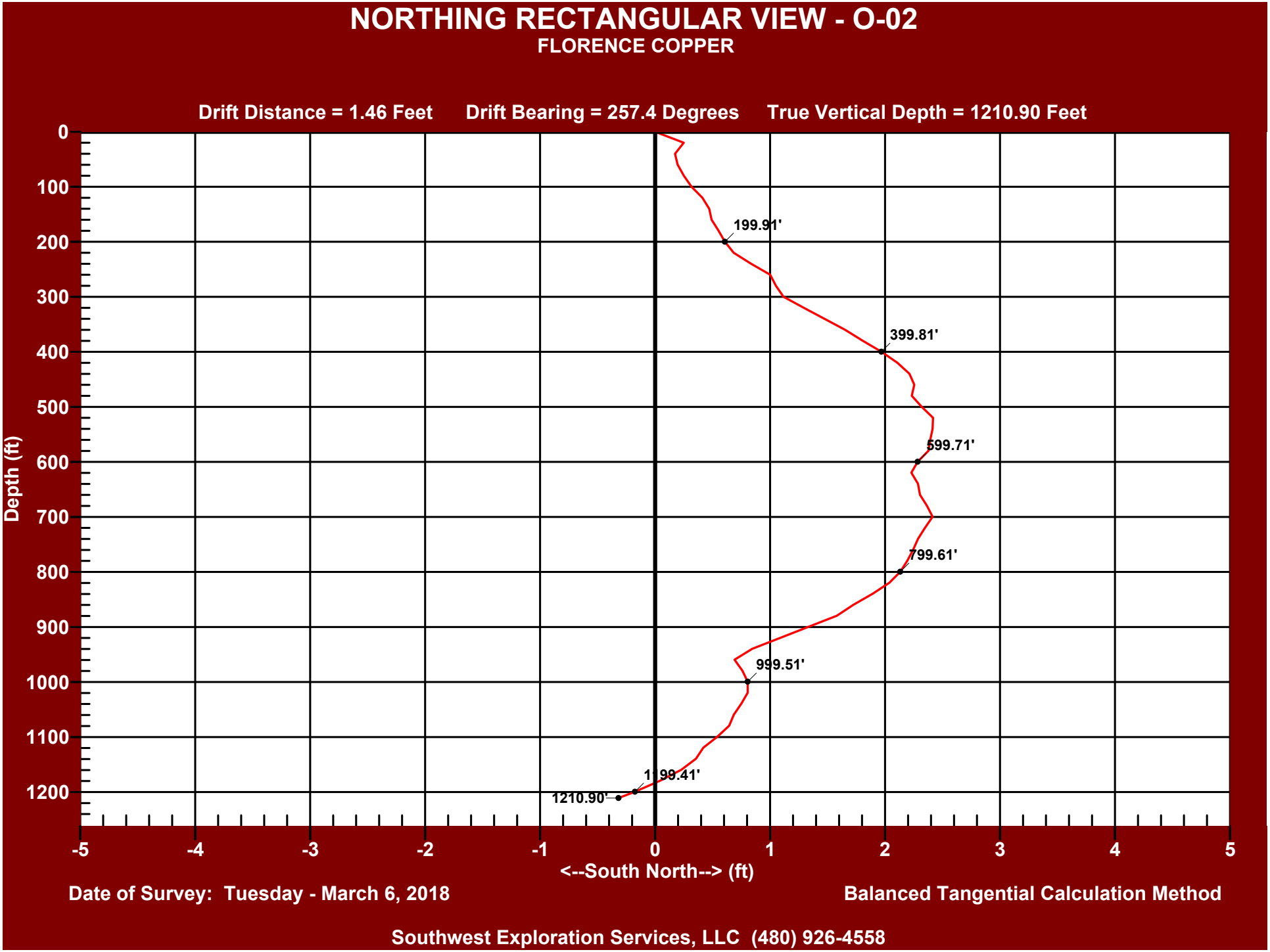
Drift Distance = 1.46 Feet Drift Bearing = 257.4 Degrees True Vertical Depth = 1210.90 Feet



Date of Survey: Tuesday - March 6, 2018 **Balanced Tangential Calculation Method**

Southwest Exploration Services, LLC (480) 926-4558


EASTING RECTANGULAR VIEW - O-02
FLORENCE COPPER
Drift Distance = 1.46 Feet
Drift Bearing = 257.4 Degrees
True Vertical Depth = 1210.90 Feet
Depth (Ft)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
199.91'
399.81'
599.71'
799.61'
999.51'
1199.41'
1210.90'
-5
-4
-3
-2
-1
0
1
2
3
4
5
<--West East--> (Ft)
Date of Survey: Tuesday - March 6, 2018
Balanced Tangential Calculation Method
Southwest Exploration Services, LLC (480) 926-4558


NORTHING RECTANGULAR VIEW - O-02
FLORENCE COPPER
Drift Distance = 1.46 Feet
Drift Bearing = 257.4 Degrees
True Vertical Depth = 1210.90 Feet
Depth (ft)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
199.91'
399.81'
599.71'
799.61'
999.51'
1199.41'
1210.90'
-5
-4
-3
-2
-1
0
1
2
3
4
5
<--South North--> (ft)
Date of Survey: Tuesday - March 6, 2018
Balanced Tangential Calculation Method
Southwest Exploration Services, LLC (480) 926-4558

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	FLORENCE COPPER				
WELL ID	O-02				
FIELD	FLORENCE COPPER				
COUNTY	PINAL			STATE	ARIZONA
	SEC	TWP	RGE		
LOCATION					
PERMANENT DATUM			ELEVATION	K.B.	
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM	D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	

TYPE OF LOGS: GAMMA - CALIPER
MORE: TEMP. / FLUID RES.

OTHER SERVICES
SONIC
4 PI DENSITY
DUAL DENSITY

DATE	3-28-18			TYPE FLUID IN HOLE		FORMATION WATER	
RUN No	1			MUD WEIGHT		N/A	
TYPE LOG	GAMMA - CALIPER - TFR			VISCOSITY		N/A	
DEPTH-DRILLER	1200 FT.			LEVEL		~ 225 FT.	
DEPTH-LOGGER	1195 FT.			MAX. REC. TEMP.		30.55 DEG. C	
BTM LOGGED INTERVAL	1195 FT.			IMAGE ORIENTED TO:		N/A	
TOP LOGGED INTERVAL	SURFACE			SAMPLE INTERVAL		0.2 FT.	
DRILLER / RIG#	HYDRO RESOURCES			LOGGING TRUCK		TRUCK #900	
RECORDED BY / Logging Eng.	A. OLSON / M. QUINONES			TOOL STRING/SN		MSI COMBO TOOL SN 5543	
WITNESSED BY	CHAD - H&A			LOG TIME:ON SITE/OFF SITE		11:20 P.M.	

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	40 FT.	14 IN.	STEEL	SURFACE	500 FT.
2	20 IN.	40 FT.	500 FT.	5 IN.	STEEL	SURFACE	500 FT.
3	12 1/4 IN.	500 FT.	TOTAL DEPTH	5 IN.	PVC	500 FT.	TOTAL DEPTH

COMMENTS:

.

Tool Summary:

Date	3-28-18	**Date**	3-28-18	**Date**	3-28-18
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	ALT 4 RX SONIC	**Tool Model**	COMPROBE 4 PI
Tool SN	5543	**Tool SN**	4572	**Tool SN**	6009
From	SURFACE	**From**	200 FT.	**From**	SURFACE
To	1195 FT.	**To**	1195 FT.	**To**	1195 FT.
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	900	**Truck No**	900	**Truck No**	900
Operation Check	3-27-18	**Operation Check**	3-27-18	**Operation Check**	3-27-18
Calibration Check	3-27-18	**Calibration Check**	N/A	**Calibration Check**	N/A
Time Logged	11:30 A.M.	**Time Logged**	12:15 P.M.	**Time Logged**	1:05 P.M.

Date	3-28-18	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL DENSITY	**Tool Model**		**Tool Model**	
Tool SN	6187	**Tool SN**		**Tool SN**	
From	SURFACE	**From**		**From**	
To	1195 FT.	**To**		**To**	
Recorded By	A. OLSON	**Recorded By**		**Recorded By**	
Truck No	900	**Truck No**		**Truck No**	
Operation Check	3-27-18	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	1:40 P.M.	**Time Logged**		**Time Logged**	

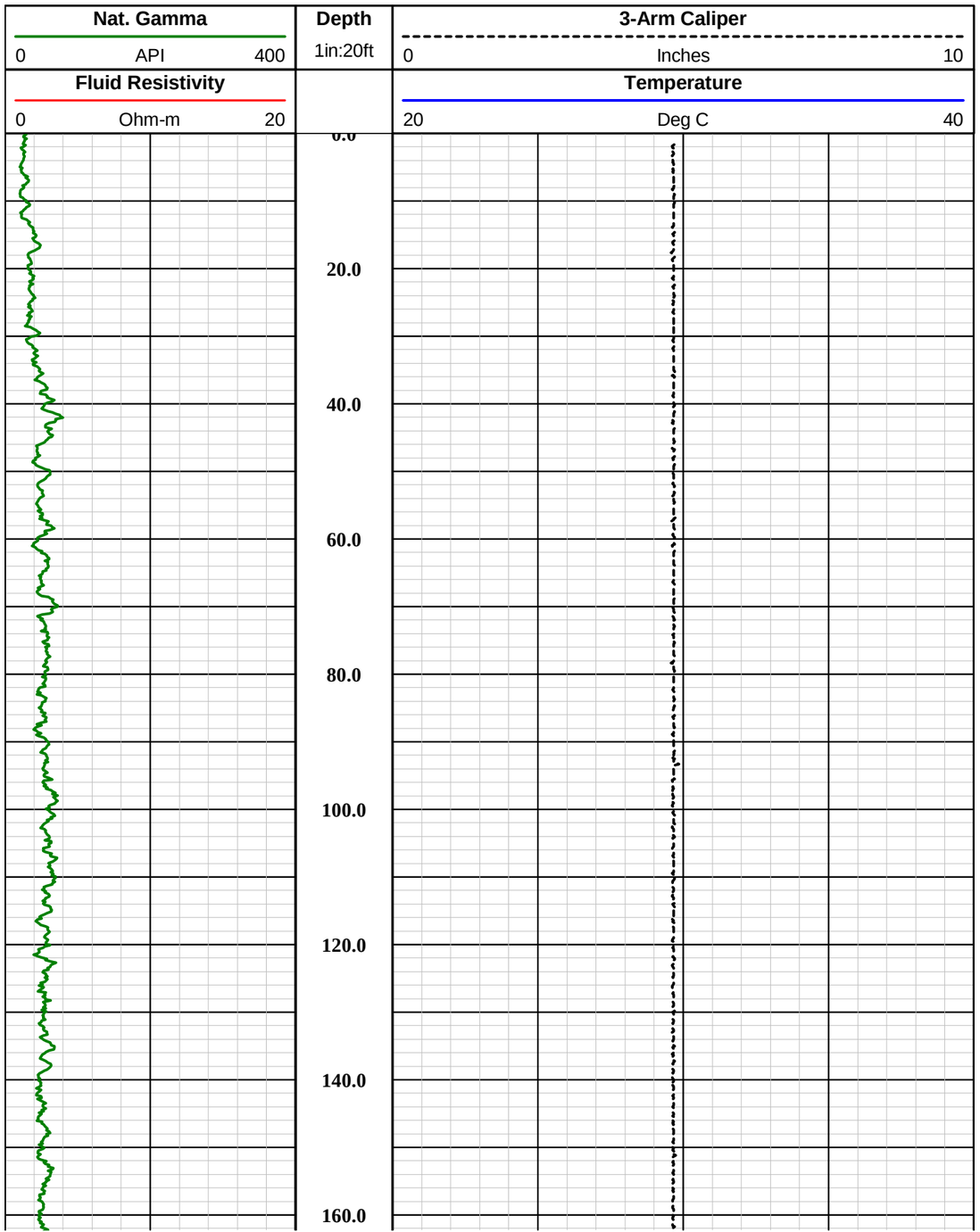
Additional Comments:

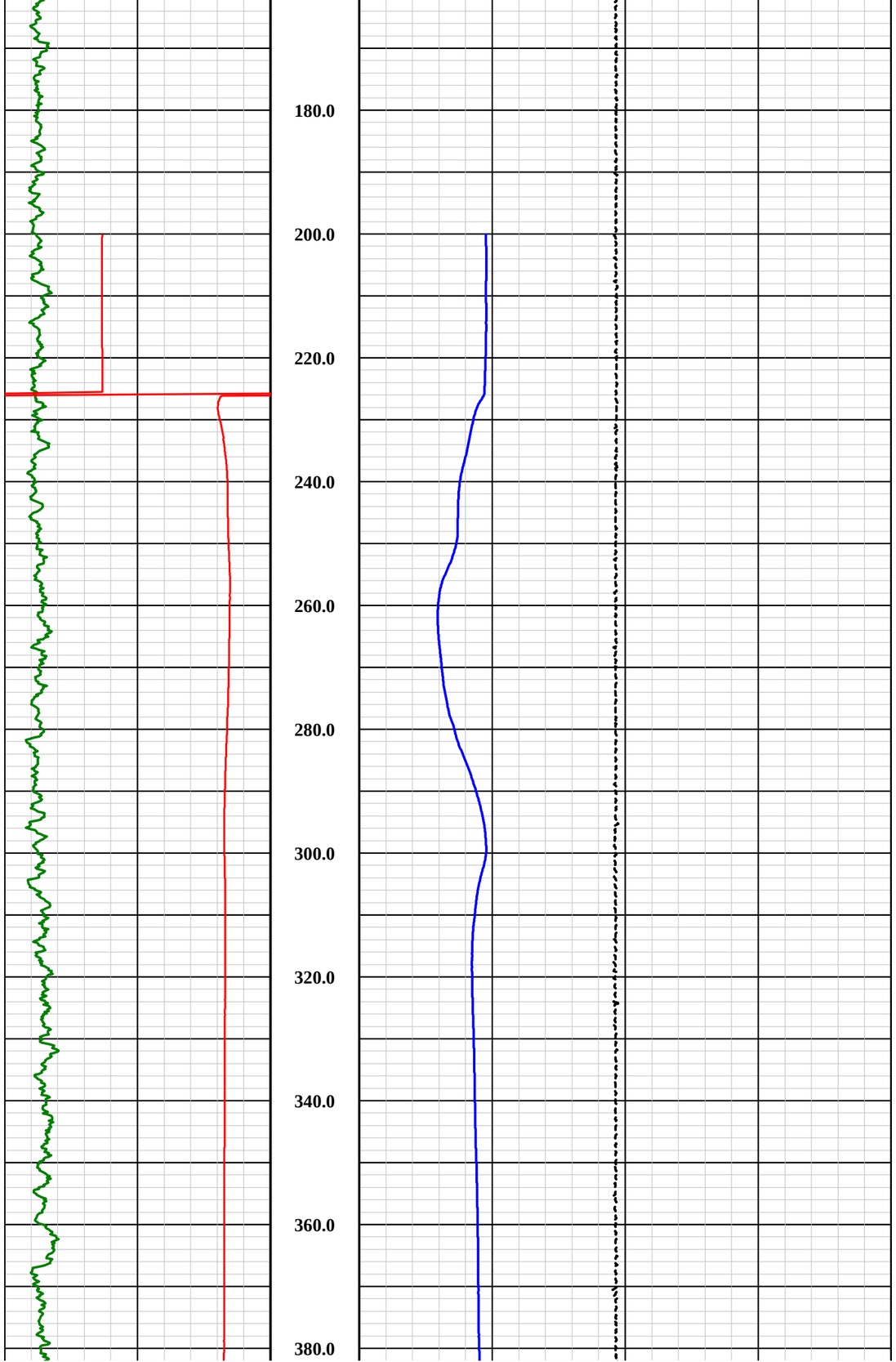
Caliper Arms Used: 9 IN. **Calibration Points:** 4 IN. & 12 IN.

E-Log Calibration Range: N/A **Calibration Points:** N/A

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

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220.0
240.0
260.0
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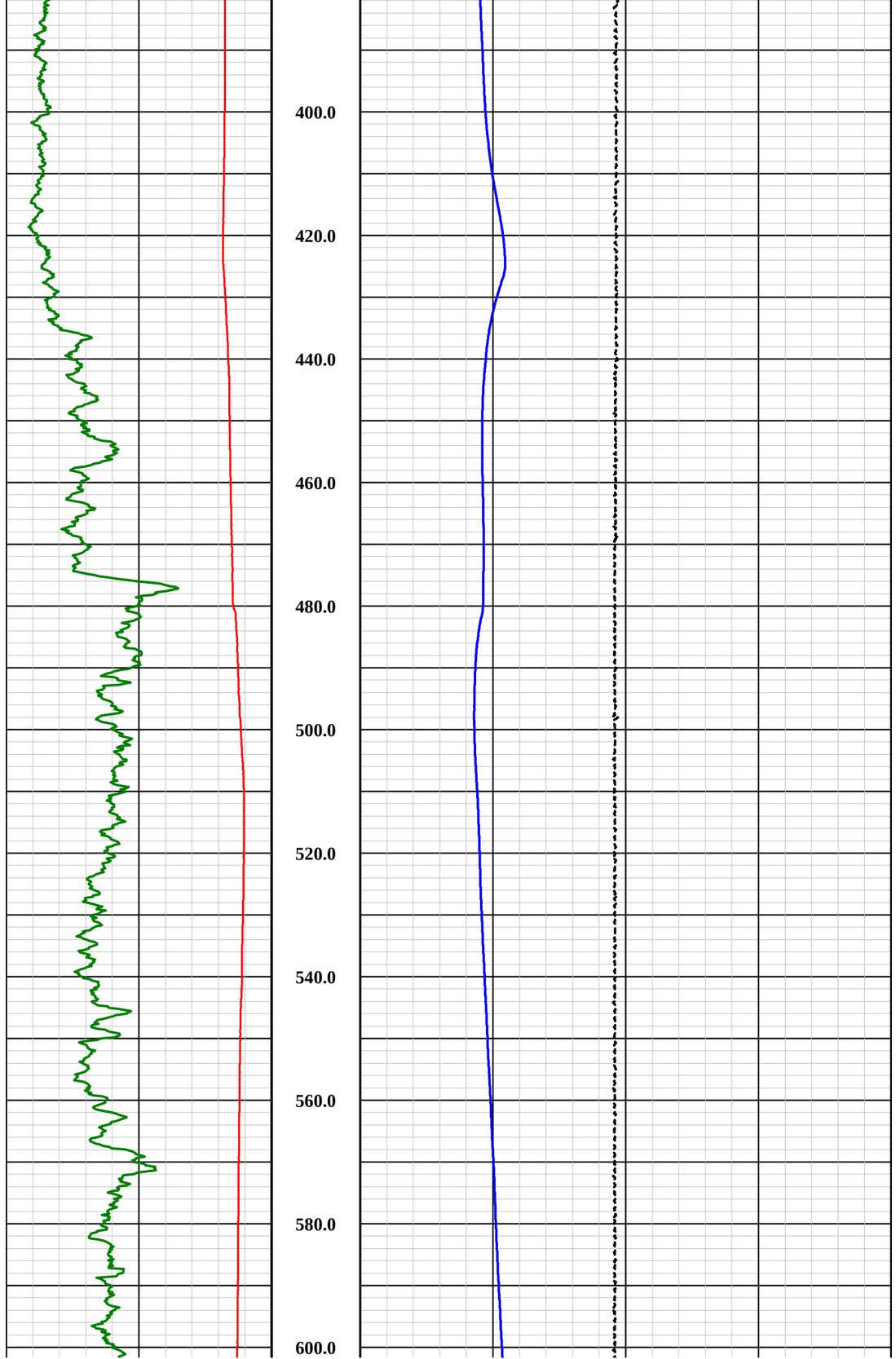
300.0
320.0
340.0
360.0
380.0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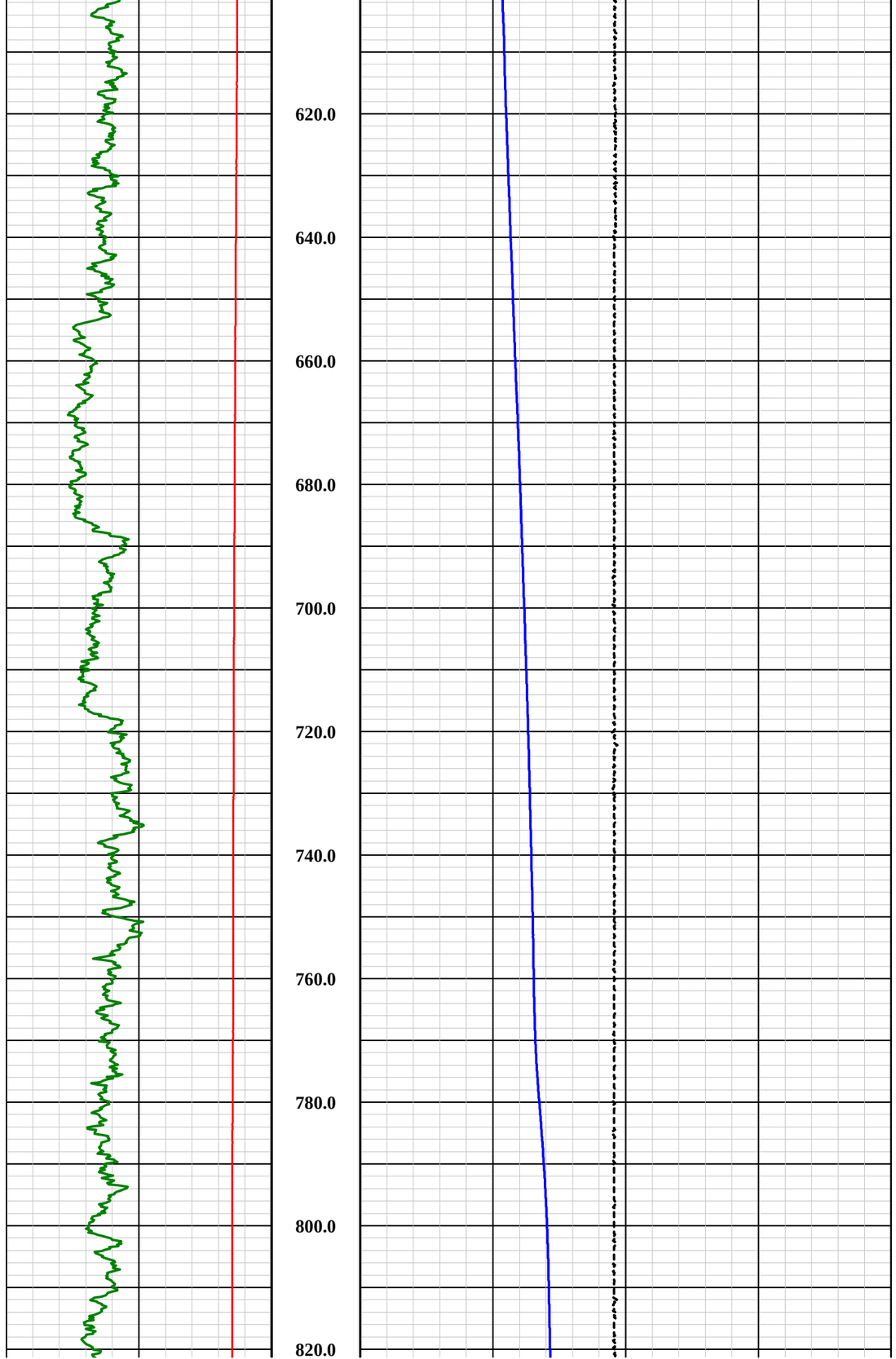
600.0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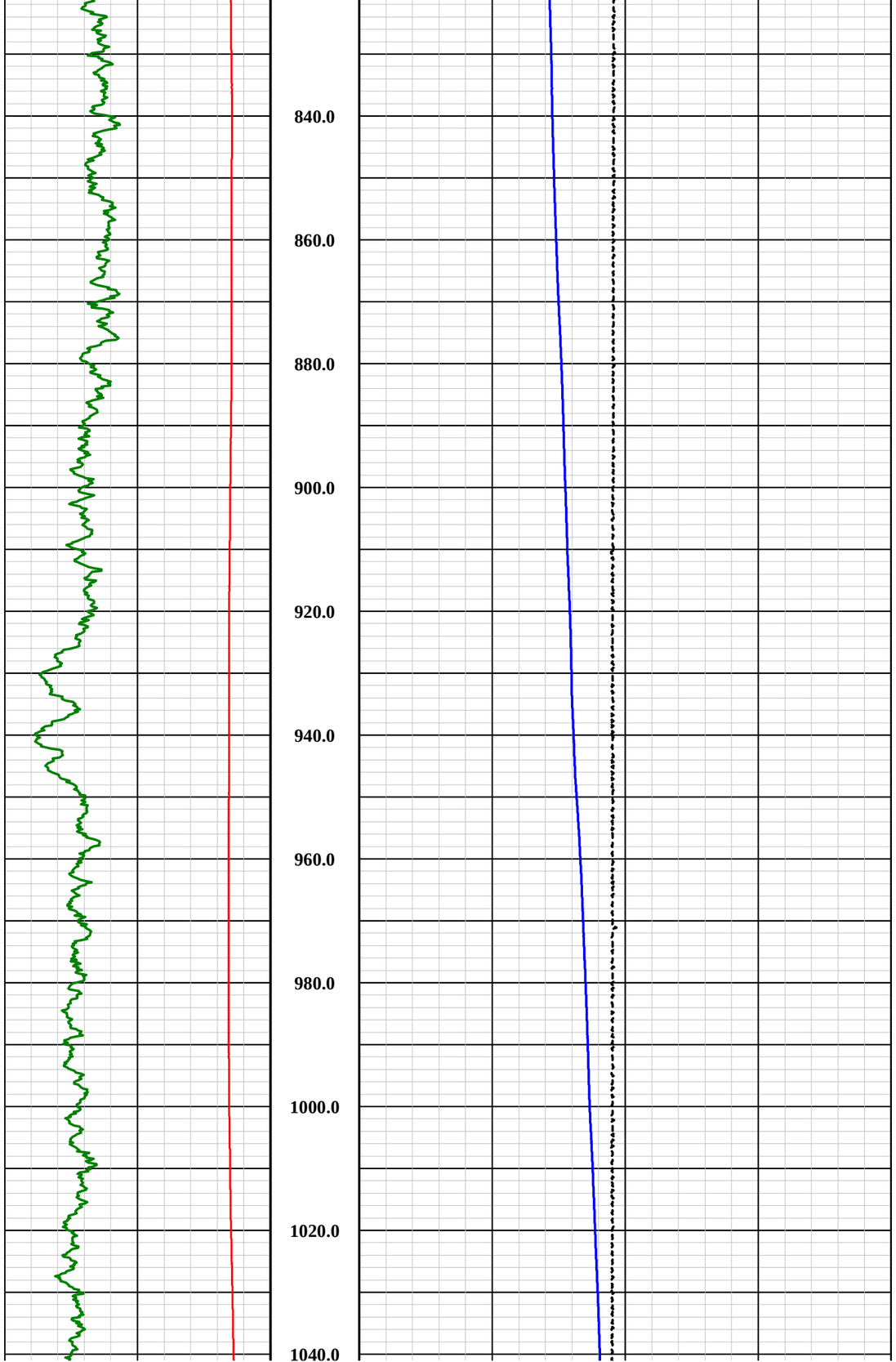
760.0
780.0
800.0
820.0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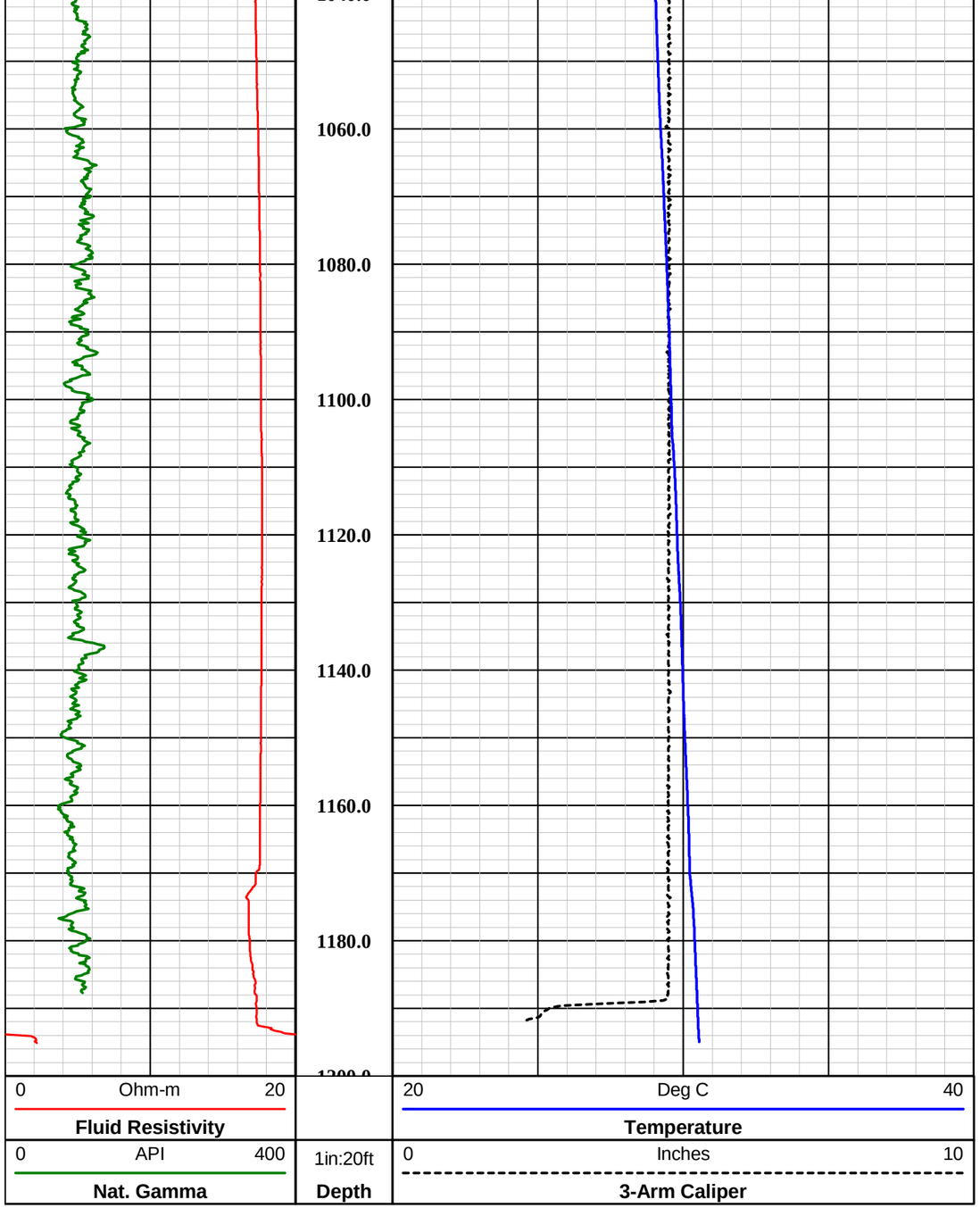
960.0
980.0
1000.0
1020.0
1040.0

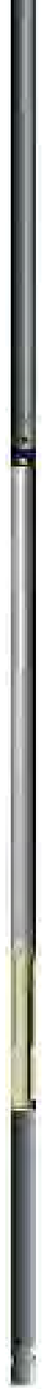


MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs



Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	FLORENCE COPPER
Well	O-02
Field	FLORENCE COPPER
County	PINAL
State	ARIZONA

Final **GCT Summary**

APPENDIX F

Cement Bond Log Summary

WELL O-02

Geophysical Log Summary

COMPANY:	FLORENCE COPPER COMPANY	Logging Engineer:	VARIOUS
FIELD:	FLORENCE COPPER SITE	Date Logged:	VARIOUS
WELL ID:	O-02	Processed By:	K.M / B.C.
COUNTY:	PINAL STATE: ARIZONA	Date Processed:	07-17-18

Southwest Exploration Services, LLC
borehole geophysics & video services

HALEY ALDRICH

O-02 Sonic CBL with Density Summary

Depth
1in:20ft

Nat. Gamma — Cased 3-28-18
0 API 200

3-Arm Caliper — Cased 3-28-18
0 Inches 10

Comp Density — Cased 3-28-18
-1 g/cc 3

Compensation — Cased 3-28-18
-3 g/cc 1

RX1 - VDL (60mm) — Open 3-5-18
100 uSec 1000

RX1 - TT (60mm) — Open 3-5-18
100 uSec 1000

RX1 - VDL — Cased 3-28-18
100 uSec 1020

RX1 - TT — Cased 3-28-18
100 uSec 1020

RX4 - VDL — Cased 3-28-18
100 uSec 1020

RX4 - TT — Cased 3-28-18
100 uSec 1020

Velocity Anal — Cased 3-28-18
40 us/ft 220

P-Wave Slow — Cased 3-28-18
40 us/ft 220

Steel
40 us/ft 220

FRP
40 us/ft 220

PVC
40 us/ft 220

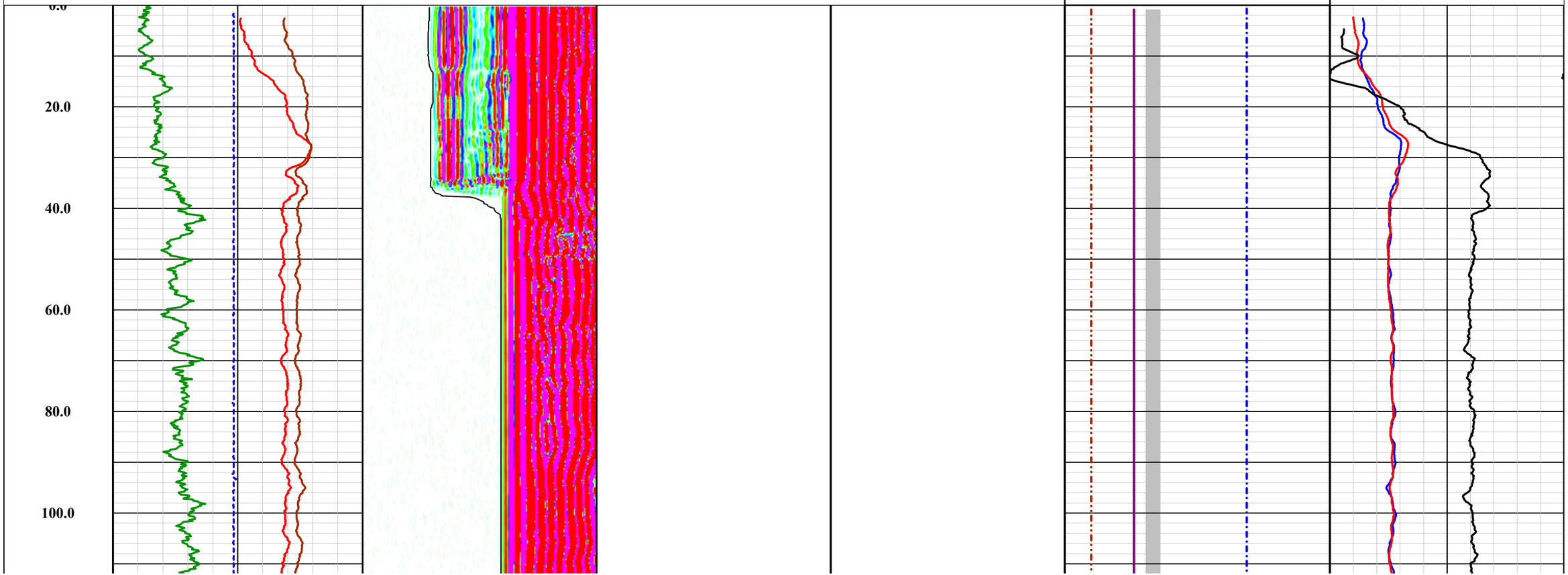
Cement

Near Density — Cased 3-28-18
1 g/cc 4

Far Density — Cased 3-28-18
1 g/cc 4

4 Pi Density (Dry) — Cased 3-28-18
1500 CPS 900

4 Pi Density (Wet) — Cased 3-28-18
600 CPS 0



120.0

140.0

160.0

180.0

200.0

220.0

240.0

260.0

280.0

300.0

320.0

Fluid Level ~226.3'

340.0

360.0

380.0

400.0

420.0

440.0

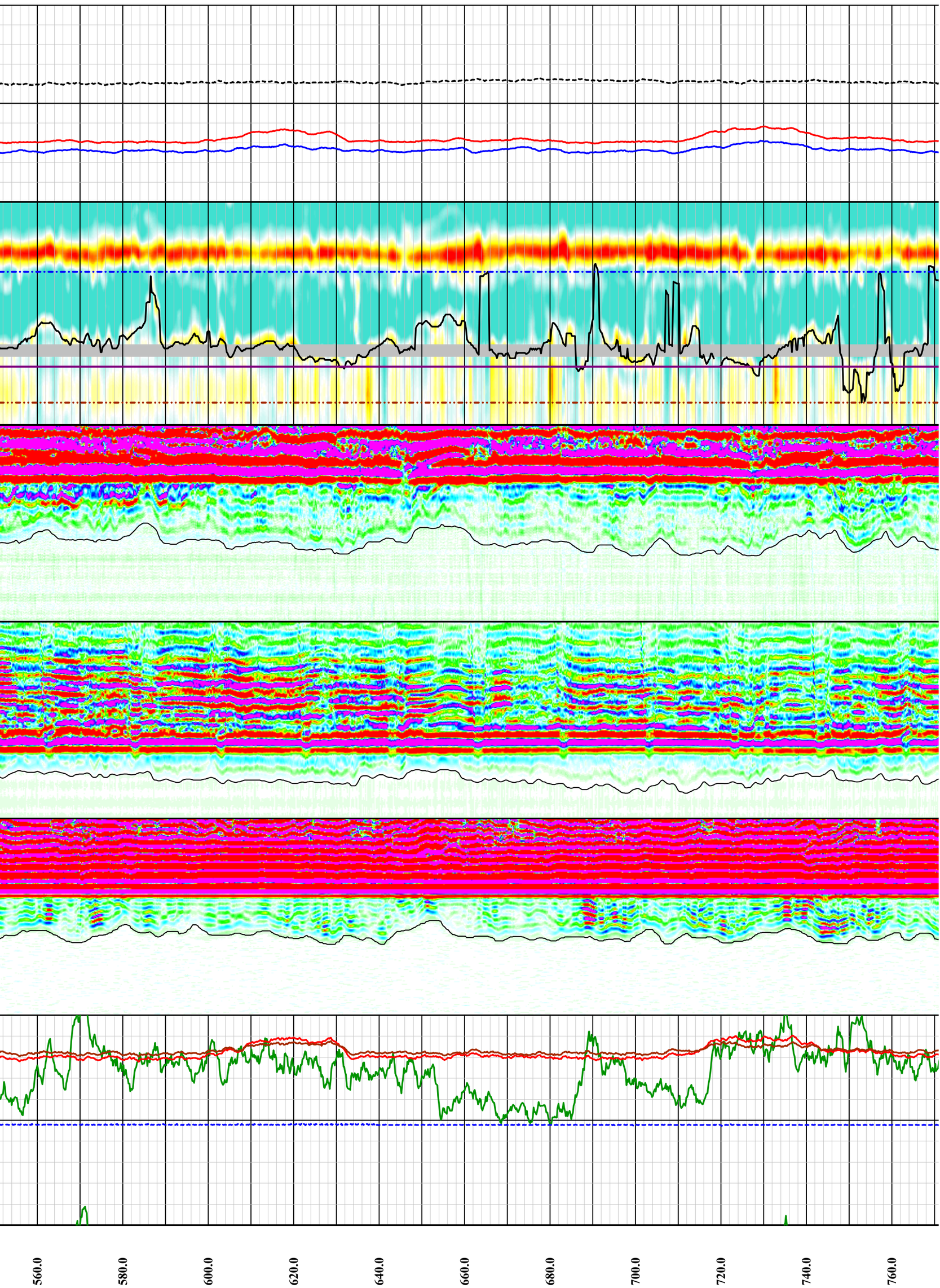
460.0

480.0

500.0

520.0

540.0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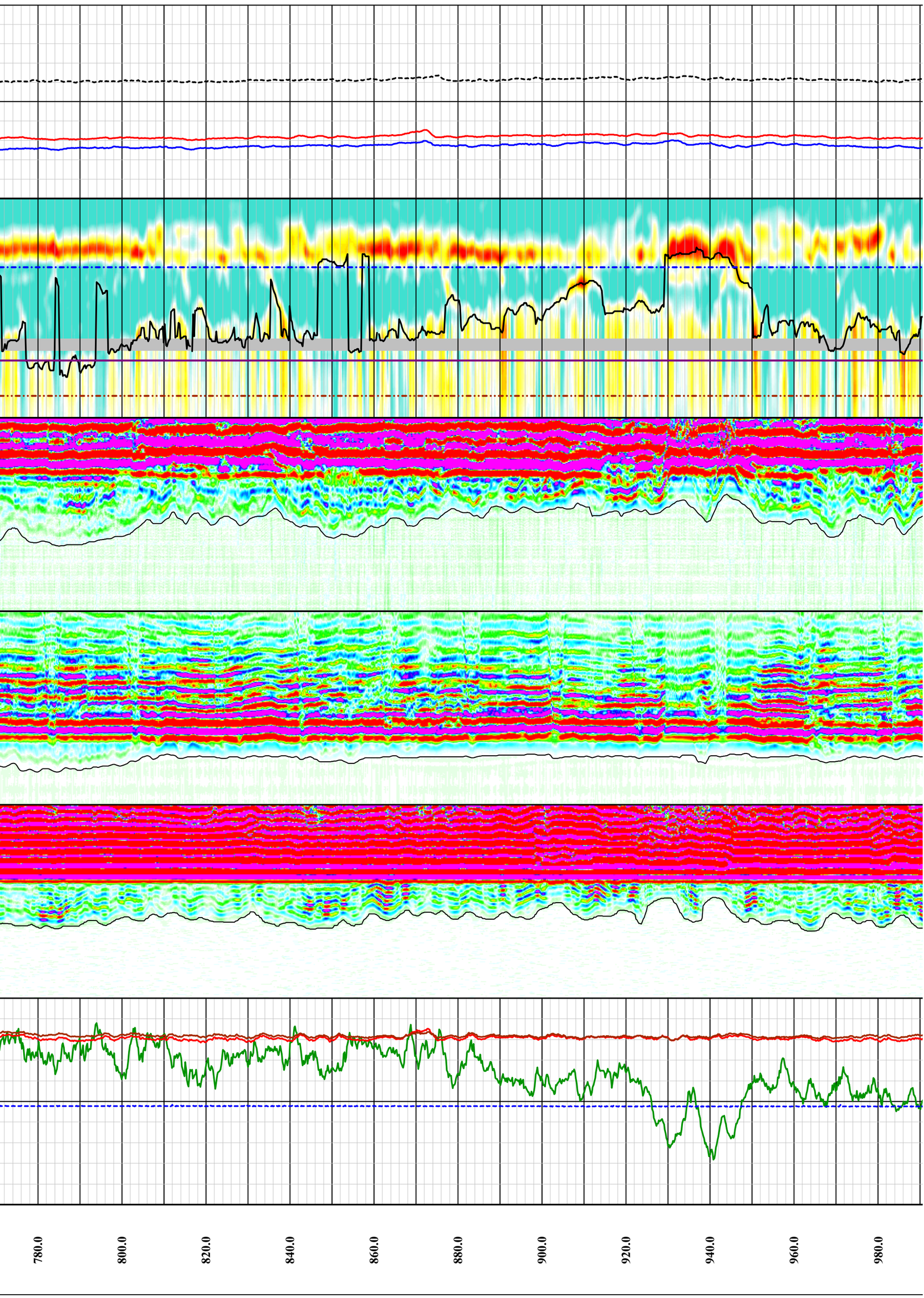
760.0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840.0
860.0
880.0
900.0
920.0
940.0
960.0
980.0

1000.0

1020.0

1040.0

1060.0

1080.0

1100.0

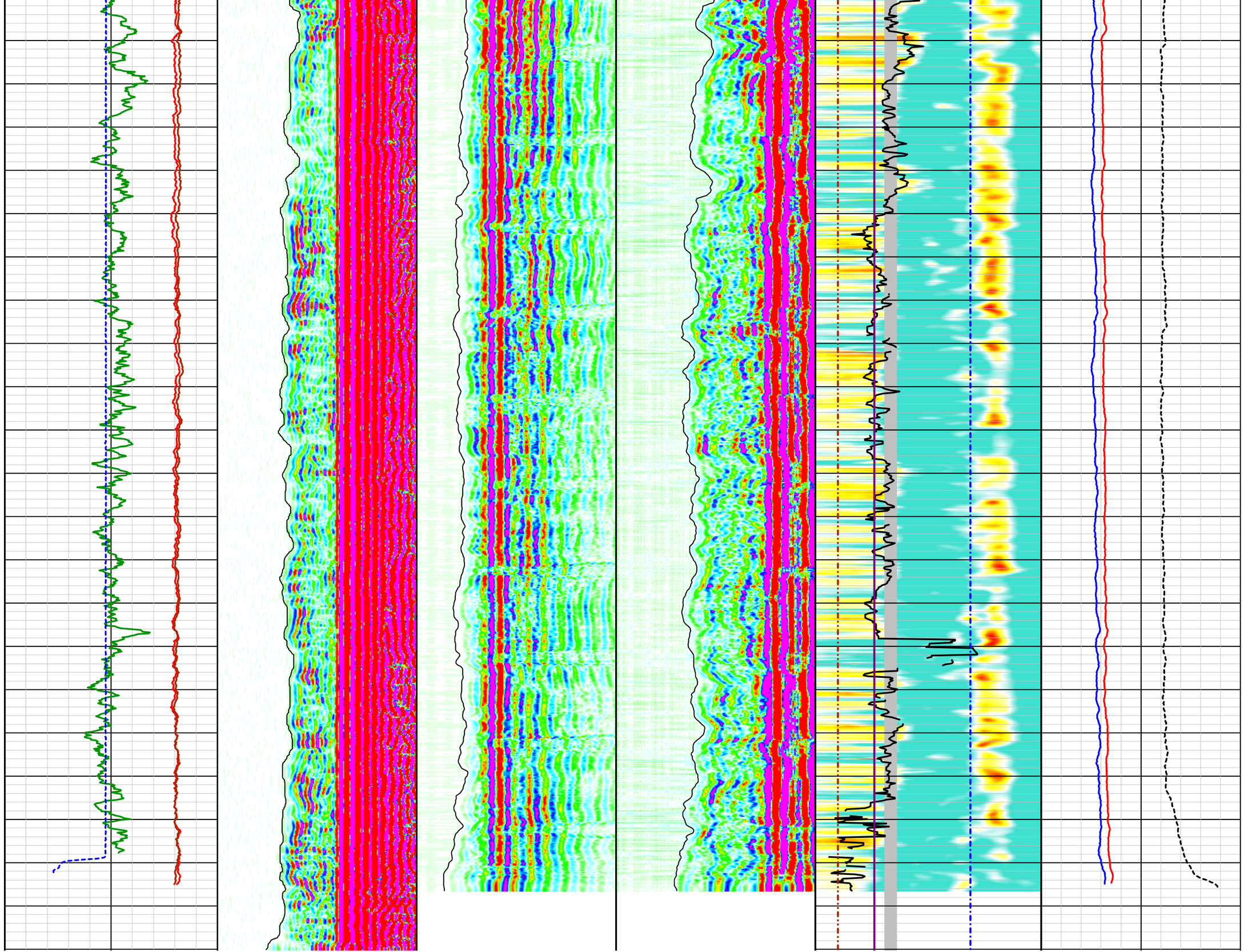
1120.0

1140.0

1160.0

1180.0

1200.0



Version 4-8-18, RECC

					Cement	
					40 us/ft 220	600 CPS 0
					PVC	Cased 3-28-18
					40 us/ft 220	4 Pi Density (Wet)
					FRP	1500 CPS 900
					40 us/ft 220	Cased 3-28-18
					Steel	4 Pi Density (Dry)
-3 g/cc 1						
Cased 3-28-18						
Compensation						
-1 g/cc 3						
Cased 3-28-18						
Comp Density						
0 Inches 10	100 uSec 1000	100 uSec 1020	100 uSec 1020	40 us/ft 220	1 g/cc 4	
Cased 3-28-18	Open 3-5-18	Cased 3-28-18	Cased 3-28-18	Cased 3-28-18	Cased 3-28-18	
3-Arm Caliper	RX1 - TT (60mm)	RX1 - TT	RX4 - TT	P-Wave Slow	Far Density	
0 API 200	100 uSec 1000	100 uSec 1020	100 uSec 1020	40 us/ft 220	1 g/cc 4	
Cased 3-28-18	Open 3-5-18	Cased 3-28-18	Cased 3-28-18	Cased 3-28-18	Cased 3-28-18	
Nat. Gamma	RX1 - VDL (60mm)	RX1 - VDL	RX4 - VDL	Velocity Anal	Near Density	
1in:20ft	**O-02 Sonic CBL with Density Summary**					
Depth						

APPENDIX G

SAPT Documentation

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator FLORENCE COPPER, INC
Address 1575 W. HUNT HWY
FLORENCE, AZ 85132
Well Name O-02

State Permit No. P-101704
USEPA Permit No. R9UIC-AZ3-FY11-1
Date of Test 3/25/2018
Well Type ENV-MONITORING- Class III

LOCATION INFORMATION SW Quarter of the NE Quarter of the SW Quarter of Section 28 ; Range 9E ; Township 4S ; County PINAL ;

Company Representative IAN REAM ; Field Inspector LAUREN CANDREVA ;

Type of Pressure Gauge Pressure transducer with Data Logger inch face; 300 psi full scale; 0.001 psi increments;

New Gauge? Yes ☑ No ☐ If no, date of calibration ____ Calibration certification submitted? Yes ☐ No ☑

TEST RESULTS	
Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells. For Class II wells, annulus pressue should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure. Original chart recordings must be submitted with this form.	5-year or annual test on time? Yes ☐ No ☑ 2-year test for TA'd wells on time? Yes ☐ No ☑ After rework? Yes ☐ No ☑ Newly permitted well? Yes ☑ No ☐

.

Time	Pressure (in psig) Annulus	Tubing
15:30	170.76	same
15:40	172.07	same
15:50	173.36	same
16:00	174.37	same

Casing size 5" - NOMINAL
Tubing size 2"
Packer type INFLATABLE PACKER
Packer set @ 4.27(top), 482.47(bottom)
Top of Permitted Injection Zone 470
Is packer 100 ft or less above top of Injection Zone ? Yes ☑ No ☐
If not, please submit a justification.
Fluid return (gal.) 0.47
Comments: Two tests conducted to confirm results, results of both tests included in attached table and chart

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.05 8.54 psi
Test Period Pressure change 3.61 psi

Test Passed ☑ Test Failed ☐

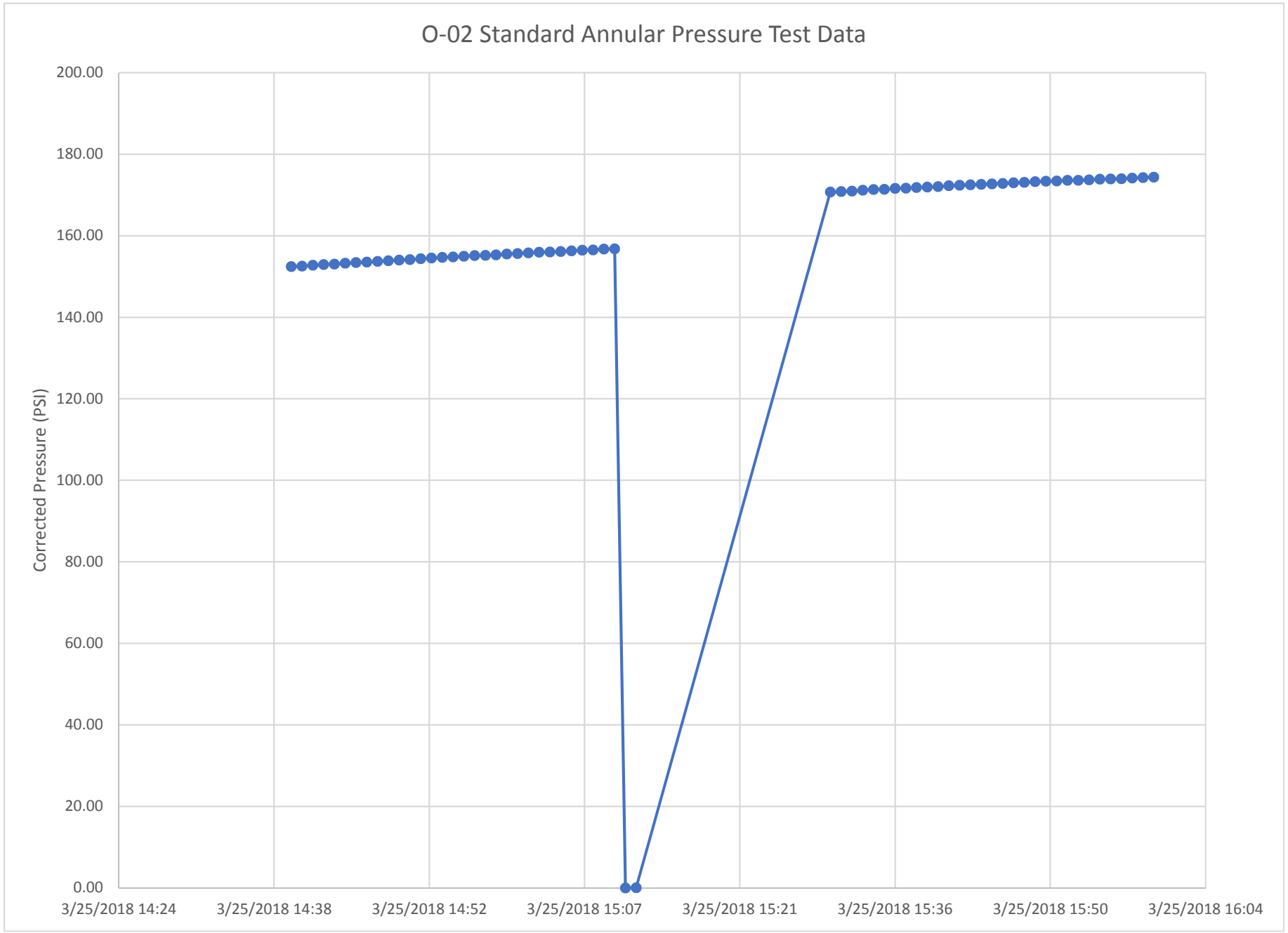
If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See 40 CFR 144.32(d))

Ian Beam
Printed Name of Company Representative

Signature of Company Representative

9-12-2018
Date


O-02 Standard Annular Pressure Test Data
Corrected Pressure (PSI)
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
3/25/2018 14:24
3/25/2018 14:38
3/25/2018 14:52
3/25/2018 15:07
3/25/2018 15:21
3/25/2018 15:36
3/25/2018 15:50
3/25/2018 16:04

Well O-02 SAPT Data		
Transducer Serial Number:	554227	
Tranducer Model Number:	Level TROLL 400 non-vented 300 psi	
Date and Time	Pressure (PSI)	Corrected Pressure (PSI) (Sensor pressure - barometric pressure)
3/25/2018 14:40	166.329	152.42
3/25/2018 14:41	166.459	152.55
3/25/2018 14:42	166.673	152.76
3/25/2018 14:43	166.832	152.92
3/25/2018 14:44	166.974	153.06
3/25/2018 14:45	167.147	153.24
3/25/2018 14:46	167.354	153.44
3/25/2018 14:47	167.46	153.55
3/25/2018 14:48	167.623	153.71
3/25/2018 14:49	167.792	153.88
3/25/2018 14:50	167.965	154.06
3/25/2018 14:51	168.071	154.16
3/25/2018 14:52	168.301	154.39
3/25/2018 14:53	168.447	154.54
3/25/2018 14:54	168.581	154.67
3/25/2018 14:55	168.695	154.79
3/25/2018 14:56	168.86	154.95
3/25/2018 14:57	169.044	155.13
3/25/2018 14:58	169.125	155.22
3/25/2018 14:59	169.221	155.31
3/25/2018 15:00	169.451	155.54
3/25/2018 15:01	169.551	155.64
3/25/2018 15:02	169.734	155.82
3/25/2018 15:03	169.864	155.95
3/25/2018 15:04	169.944	156.03
3/25/2018 15:05	170.062	156.15
3/25/2018 15:06	170.231	156.32
3/25/2018 15:07	170.391	156.48
3/25/2018 15:08	170.449	156.54
3/25/2018 15:09	170.638	156.73
3/25/2018 15:10	170.699	156.79
3/25/2018 15:11	13.91	0.00
3/25/2018 15:12	13.931	0.02
3/25/2018 15:30	184.672	170.76
3/25/2018 15:31	184.758	170.85
3/25/2018 15:32	184.879	170.97
3/25/2018 15:33	185.098	171.19
3/25/2018 15:34	185.241	171.33
3/25/2018 15:35	185.293	171.38
3/25/2018 15:36	185.502	171.59
3/25/2018 15:37	185.609	171.70

Well O-02 SAPT Data		
Transducer Serial Number:	554227	
Tranducer Model Number:	Level TROLL 400 non-vented 300 psi	
Date and Time	Pressure (PSI)	Corrected Pressure (PSI) (Sensor pressure - barometric pressure)
3/25/2018 15:38	185.748	171.84
3/25/2018 15:39	185.857	171.95
3/25/2018 15:40	185.983	172.07
3/25/2018 15:41	186.166	172.26
3/25/2018 15:42	186.278	172.37
3/25/2018 15:43	186.389	172.48
3/25/2018 15:44	186.533	172.62
3/25/2018 15:45	186.616	172.71
3/25/2018 15:46	186.758	172.85
3/25/2018 15:47	186.898	172.99
3/25/2018 15:48	187.017	173.11
3/25/2018 15:49	187.155	173.25
3/25/2018 15:50	187.271	173.36
3/25/2018 15:51	187.35	173.44
3/25/2018 15:52	187.53	173.62
3/25/2018 15:53	187.525	173.62
3/25/2018 15:54	187.643	173.73
3/25/2018 15:55	187.761	173.85
3/25/2018 15:56	187.821	173.91
3/25/2018 15:57	187.921	174.01
3/25/2018 15:58	188.083	174.17
3/25/2018 15:59	188.158	174.25
3/25/2018 16:00	188.28	174.37
3/25/2018 16:01	13.938	0.03

APPENDIX H

Well Development Field Forms

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI PFF	Project No.: 129687
Well No.: O-02	Date: 3/15/18
Location: Elmira, NY	Measuring Point: Ground
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 500-1200
Pump Type/Setting (ft bls): 423'	Activity: Airlift
How Q Measured: cone + stopwatch	H&A Personnel: B. Kimmerly

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Turbidity NTU	Comments
1453		start	Airlifting						
1455	1			0.0	7.71	2412	24.98	OVER	Muddy Brown
1510	stop	Airlifting	to add water				balance	it keeps going dry	
~~1430~~	~~Pump~~	~~start~~	~~Airlifting~~		~~7.87~~	~~2222~~	~~23.00~~	~~OVER~~	
1435	2	423	—	0.0	7.87	2222	23.00	OVER	Muddy Brown
1605	2	423	—	0.0	7.89	2222	23.37	OVER	SAA
1635	2	423	—	0.0	7.88	2163	22.58	OVER	SAA
1705	2	423	—	0.0	7.93	2100	22.57	OVER	SAA
1720	2	423	—	0.0	8.04	2050	22.10	OVER	SAA
1750	2	423	—	0.0	8.08	1005	21.45	OVER	SAA
3/15 1750	stop	Airlifting							
3/16 700	start	Airlifting							
705	2	423	—	0.0	8.12	2074	17.78	OVER	Muddy Brown
0740	2	423	—	0.0	8.18	2143	20.14	OVER	SAA
0800	2	423	—	0.0	8.14	2130	20.41	OVER	SAA
0830	2	423	—	0.0	8.12	2186	20.53	OVER	SAA
0900	2	423	—	0.0	8.16	2218	21.09	OVER	SAA
0930	2	423	—	0.0	8.18	2240	21.94	OVER	SAA
1000	2	423	—	0.0	8.14	2241	22.04	OVER	SAA
1030	2	423	—	0.0	8.21	2246	22.57	OVER	SAA
1100	2	423	—	0.0	8.17	2263	22.80	OVER	SAA
1135	2	423	—	0.0	8.07	2234	22.79	OVER	SAA
1205	2	423	—	0.0	8.04	2329	23.96	OVER	SAA
1235	2	423	—	0.0	8.04	2238	23.25	OVER	SAA
1305	2	423	—	0.0	8.12	2290	24.55	OVER	SAA
1335	2	423	—	0.0	7.90	2243	23.67	OVER	SAA
1405	2	423	—	0.0	7.97	2265	24.20	OVER	SAA
1435	2	423	—	0.0	8.08	2253	23.81	OVER	SAA

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name:	FCJ PTF	Project No.:	129687-007
Well No.:	D-02	Date:	3/16/18
Location:	Florence, AZ	Measuring Point:	Ground
Total Depth of Well (ft bls):	1200 BK 805.3	Screen Interval (ft bls):	500 - 1200
Pump Type/Setting (ft bls):	423 - 599.5, 602	Activity:	Airlifting
How Q Measured:	Cowarts pump rate	H&A Personnel:	B. Rumburg

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Turbidity NTU	Comments
1505	2 ~~BH~~	423	—	0.0	8.09	2246	23.79	OVER	Muddy Brown
1535	2 ~~BH~~	423	—	0.0	8.13	2257	23.57	OVER	SAA
1605	2	423	—	0.0	8.15	2234	22.85	OVER	SAA
1608	Pump OFF								
1740	Pump On								
1750		602	—	0.0	8.11	2180	21.23	OVER	Muddy Brown
1820		602	—	0.0	8.11	2135	20.82	OVER	SAA
1850		602	—	0.0	8.10	2102	20.66	OVER	SAA
1980		602	—	0.0	8.09	2057	20.04	OVER	SAA
2000		602	—	0.0	8.18	2057	20.07	OVER	SAA
2100		602	—	0.0	8.13	2027	20.39	OVER	SAA
2200		602	—	0.0	8.16	1901	19.54	OVER	Turbid brown - less "muddy"
2300		602	—	0.0	8.03	1960	20.69	OVER	Turbid Brown
2400		602	—	0.0	8.14	1912	18.80	OVER	SAA
0100		602	—	0.0	8.16	1900	18.63	OVER	SAA
0200		602	—	0.0	8.14	1900	18.77	OVER	SAA
0300		602	—	0.0	8.17	1876	18.11	OVER	SAA
0400		602	—	0.0	8.16	1873	18.31	OVER	SAA
0500		602	—	0.0	8.18	1850	18.14	OVER	SAA
0600		602	—	0.0	8.18	1866	17.76	OVER	SAA
0700		602	—	0.0	8.12	1833	18.11	OVER	SAA
0930		805	—	0.0	8.10	1963	20.87	OVER	Turbid brown
1000		805	—	0.0	8.12	1980	21.69	OVER	SAA
1025		805	—	0.0	8.08	1992	21.89	OVER	SAA
1100		805	—	0.0	8.14	1943	21.87	OVER	SAA
1200		805	—	0.0	8.10	1965	22.37	OVER	SAA

Comments:

HALEY ALDRICH

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI PTF	Project No.: 129687-007
Well No.: O-02	Date: 3/17/18
Location: Florence, AZ	Measuring Point: Dis/Lar
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 508-1200
Pump Type/Setting (ft bls): Various	Activity: Airlifting
How Q Measured: Cone + Stopwatch	H&A Personnel: B. Rinehart, K. Ford

Turbidity

Time	Discharge (gpm)	Pumping Water Level (ft)	~~Specific Capacity (gpm/ft)~~	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °F	Comments
1300	3	805	OVER	0.0	8.10	1950	22.21	Turbid Brown
1330	3	805	OVER	0.0	8.11	1975	22.75	SAA
1400	3	805	OVER	0.0	8.02	1946	22.69	SAA
1500	3	805	OVER	0.0	8.10	1943	22.71	SAA
1500	Stop	Airlifting						
1605	Start	airlifting						
1620	3	1017	OVER	0.0	8.14	2330	OVERSAT	Turbid brown
1655	3	1017	OVER	0.0	8.07	1941	22.86	SAA
1725	3	1017	802	0.0	8.08	1901	22.45	SAA
1740	3	1017	674	0.0	8.08	1893	22.32	SAA
1805	3	1017	633	0.0	8.09	1864	21.84	~~SAA~~ cloudy, brown
1900	3	1017	549	0.0	8.11	1828	21.18	SAA
2000	3	1017	497	0.0	8.10	1806	21.11	SAA
2100	3	1017	441	0.0	8.11	1804	20.95	SAA
2200	3	1017	445	0.0	8.11	1783	20.90	SAA
2300	3	1017	398	0.0	8.13	1772	19.81	SAA
3-18-18 0000	3	1017	324	0.0	8.13	1765	20.63	SAA
0100	3	1017	315	0.0	8.15	1748	20.14	SAA
0200	3	1017	309	0.0	8.13	1740	20.12	Moderately cloudy, brown
0300	3	1017	268	0.0	8.14	1739	20.36	SAA
0400	3	1017	270	0.0	8.13	1735	20.21	SAA
0500	3	1017	255	0.0	8.15	1729	20.37	SAA
0600	3	1017	240	0.0	8.13	1736	20.54	SAA
0700	3	1017	237	0.0	8.16	1727	19.91	SAA
0720	—	Stop Airlifting						
0902	—	1198	SI	Airlifting				
0915	8	1198	OVER	0.0	8.04	1948	19.32	Turbid Brown
0930	8	1198	223	0.0	7.99	1681	20.67	Cloudy

Comments:

DEVELOPMENT
FIELD DATA LOG

Project Name: FLI PTF	Project No.: 129687-007
Well No.: O-02	Date: 3/18/18-3/
Location: Florence, AZ	Measuring Point: Pitless
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 503-1200
Pump Type/Setting (ft bls): 1198	Activity: Airlift
How Q Measured: Cone + Flowmeter	H&A Personnel: B. Kinney/S. Laney

Turbidity (NTU)

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °F	Comments
1000	8	1198	195	0.0	7.97	1694	21.43	Cloudy
1030	8	1198	220	0.0	8.02	1705	21.91	SAA
1100	8	1198	207	0.0	8.03	1712	22.23	SAA
1130	8	1198	147	0.0	8.03	1666	20.91	SAA
1200	8	1198	123	0.0	8.03	1708	22.45	SAA
1230	8	1198	122	0.0	8.04	1715	22.69	SAA
1300	8	1198	117	0.0	8.05	1775	19.94	SAA
1330	8	1198	114	0.0	8.05	1710	22.48	SAA
1400	8	1198	110	0.0	8.02	1722	23.02	SAA
1430	8	1198	113	0.0	7.88	1705	22.40	SAA
1530	8	1198	115	0.0	7.84	1694	22.24	SAA
1600	8	1198	104	0.0	8.00	1685	21.81	SAA
1605	~~Pump~~	Stop Airlift						
3/19/18 0805	—	1107	install	1 gallon of aquaclear				
0845	—	848	install	1 gallon of aquaclear				
0920	—	551	install	1 gallon of aquaclear				
1038	—	Swab 1100-1200	x 15 min					
1053	—	Swab 1000-1100	x 15 min					
1110	—	Swab 900-1000	x 15 min					
1132	—	Swab 800-900	x 15 min					
1149	—	Swab 700-800	x 15 min					
1205	—	Swab 600-700	x 15 min					
1220	—	Swab 500-600	x 15 min					
1235	stop	swabbing						
3/20/18 0730	8	424'	—	—	8.01	1405	19.48	muddy, brown
0800	8	424'	OVER	—	8.45	1373	21.39	cloudy, brown
0830	8	424'	OVER	—	8.43	1328	21.47	SAA
0900	8	424	OVER		8.47	1312	21.86	Brown/MUD

Comments:

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI PTF	Project No.: 129687-007
Well No.: O-02	Date: 3/20/18
Location: Florence, AZ	Measuring Point: discharge
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 800-1200
Pump Type/Setting (ft bls): various	Activity: airlifting
How Q Measured: cone/stopwatch	H&A Personnel: S. Raney, S. Hensel

Turbidity (NTU)

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °F	Comments	NTU
0930	8	424'	OVER	<0.1	8.46	1284	22.02	BROWN / MUD	OVR
1000	8	424	OVER	>0.1	8.34	1268	22.23	BROWN / MUD	
1030	8	424'	OVER	0.0	8.37	1280	22.72	Brown / Mud	
1055	8	424'	OVER	0.0	8.41	1270	22.96	brown / cloudy	
1125	8	424'	OVER	0.0	8.42	1291	23.22	SAA	
1205	8	424'	OVER	0.0	8.49	1272	23.45	red brown, cloudy/mud	
1225	8	424'	OVER	0.0	8.51	1268	23.34	SAA	
1255	8	424'	OVER	0.0	8.48	1257	23.38	SAA	
1325	8	424'	OVER	0.0	8.48	1261	2353	SAA	
1355	8	424'	OVER	0.0	8.46	1254	23.60	SAA	
1425	8	424'	OVER	0.0	8.48	1250	23.61	SAA	
1455	8	424'	OVER	0.0	8.33	1249	23.63	SAA	
1529	8	424'	OVER	0.0	8.34	1246	23.64	SAA	
1555	8	424'	OVER	0.0	8.47	1240	23.44	SAA	
1630	8	424	973	0.0	8.29	1225	22.97	SAA, but no mud	
1631		airlift	off						
1720		614'	airlift on						
1725	10	614'	OVER	0.0	8.00	1152	22.17	brown, cloudy/mud	
1820	10	614'	619	0.0	8.43	1235	22.15	brown, cloudy	
1920	10	614'	616	0.0	8.44	1205	21.92	brown, cloudy	
2020	10	614'	373	0.0	8.43	1191	22.01	brown, cloudy	
2120	10	614'	600	0.0	8.41	1179	21.47	brown, cloudy	
2220	10	614'	589	0.0	8.39	1167	21.11	brown, cloudy	
2320	10	614'	377	0.0	8.38	1163	21.01	brown, cloudy	
0020	10	614'	295	0.0	8.39	1165	21.00	brown, cloudy	
0120	10	614'	233	0.0	8.39	1148	20.90	cloudy	
0220	10	614'	218	0.0	8.41	1141	20.88	cloudy	
0320	10	614'	204	0.0	8.43	1133	20.60	cloudy	

Comments:

DEVELOPMENT
FIELD DATA LOG

Project Name: [illegible]	Project No.: [illegible]
Well No.: O-B2	Date: 3/20/18
Location: Tucson, AZ	Measuring Point: [illegible]
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 500' - 1200
Pump Type/Setting (ft bls): submersible	Activity: Airlift
How Q Measured: cont / totalizer	H&A Personnel: J. Hensel

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Turbidity NTU	Comments
0420	10	614	[illegible]	0.0	8.02	1173	20.17	192	cloudy
0520	10	614	-	5.0	8.44	1127	20.48	174	cleared
0620	10	614	-	0.0	8.10	1623	16.53	166	cloudy
—	Move	airline	to 805 ft						
0745	Start	airlift							
0749	~15	805	-	<0.1	7.93	1878	21.56	723	cloudy, lt. brown
0805	15	805	-	0.0	8.14	1977	22.51	405	SAA.
0825	15	805	-	0.0	8.13	1861	22.88	168	sl. cloudy
0845	15	805	-	0.0	8.12	1873	22.97	161	SAA.
0905	15	805	-	0.0	8.07	1854	22.71	150	SAA.
0925	15	805	-	0.0	8.11	1861	23.02	133	SAA.
0945	15	805	-	0.0	8.13	1886	23.52	139	SAA
1005	15	805	-	0.0	8.13	1881	23.39	140	
1015	- STOP	AIRLIFT							
1057	- Start	airlift							
1102	15	1017	-	<0.1	8.04	1927	23.48	314	Sl. cloudy, lt. brown
1110	15	1017	-	<0.1	8.27	2330	23.80	OVER	Cloudy, brown
1120	15	1017	-	0.0	8.14	2085	24.05	OVER	SAA.
1135	15	1017	-	0.0	8.07	1919	25.10	132	Sl. cloudy
1150	15	1017	-	0.0	8.16	1901	23.95	85.5	V. Sl. cloudy
1153	STOP	AIRLIFT							
1235	START	AIRLIFT							
1242	8	1198	-	0.1	8.06	1909	23.93	329	Sl. Cloudy, lt. brown
1245	8	1198	-	0.1	8.24	2617	24.64	OVER	Turbid brown.
1255	8	1198	-	0.0	8.26	2470	24.01	OVER	SAA
1308	8	1198	-	0.0	8.08	1929	24.33	90.4	A V. Sl. cloudy
1320	8	1198	-	0.0	8.10	1937	24.21	69.8	Clear
1324	—	~~1198~~	STOP AIRLIFT						

Comments:

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI	Project No.: 129697-007
Well No.: O-02	Date: 3-22-18
Location: Florida A2	Measuring Point: TOC
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 500 - 1200
Pump Type/Setting (ft bls): GRUNDFOS / 1160	Activity: PUMP DEVELOPMENT
How Q Measured: TOTALIZER	H&A Personnel: C. GRUSH / S. HEAD

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Turbidity NTU	Comments
1240	0	232.5							TOTALIZER 683100
1310			PUMP	ON					1160 FT BGS
1315			683100	PUMP DID NOT START					
1315				PUMP ON					
1315	59	271.8	693100	0.01	7.11	1201	24.39	OVER	BROWN / TURBID
1345	59	276.2	684800	0	6.91	1231	25.89	169	MILKY
1430	59	278.6	687400	0	7.78	1295	24.83	184	
1515	59	279.9	690000	0	7.77	1298	25.16	93.9	
1545	59	280.6	691800	0	7.76	1288	25.01	77.2	
1615	59	281.4	693500	0	7.66	1277	24.09	65.2	
1645	59	281.7	695100	0	7.58	1263	24.62	48.7	CLOUDY
1749	59	282.55	698966	0	7.72	1266	24.53	32.6	clear
1840	59	283.05	702100	0	7.80	1236	23.98	20.7	clear
1940	59	283.38	705400	0	7.85	1235	23.17	17.7	clear
2040	59	283.79	708900	0	7.88	1226	23.81	14.6	clear
2140	59	284.00	712300	0	7.46	1220	23.58	10.3	clear
2240	59	284.3	715800	0	7.89	1212	23.41	9.81	clear
2245				PUMP OFF					
2315				PUMP ON					
2320	59	271.85	719900	0	7.90	1196	11.98	11.5	clear
2420	59	273.00	719700	0	7.91	1208	23.52	8.25	clear
2425				PUMP OFF					
0100				PUMP ON					
0105	59	276.65	715900	0	7.90	1206	23.51	9.73	clear
0200	59	282.15	723300	0	7.90	1210	23.07	8.81	clear
0202				PUMP OFF					
0217				PUMP ON					
0220	59	262.45	723400	0	7.90	1219	23.85	11.9	clear

Comments:

DEVELOPMENT
FIELD DATA LOG

Project Name: FLX PTF	Project No.: 124687-007
Well No.: 0-02	Date: 3/23/18
Location: Florence, AZ	Measuring Point: TOC
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 500 - 1200
Pump Type/Setting (ft bls): Grundfos / various	Activity: Pump Development
How Q Measured: Totalizer	H&A Personnel: S Hensel & C Price

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Turbidity NTU	Comments
0250	59	281.56	726100	0	7.90	1215	23.89	8.82	clear
0255				Pump off					
0310				Pump on					
0315	59	265.68	729,200	0	7.86	1211	23.90	9.91	clear
0345	59	281.40	728300	0	7.90	1215	23.96	7.63	clear
0350			729500		Pump off				
0405					Pump on				
0410	61	265.20	727500	0	7.89	1214	23.96	9.86	clear
0440	61	281.80	729400	0	7.89	1214	23.80	8.42	clear
0445					Pump off				
0500					Pump on				
0505	61	266.10	729500	0	7.89	1212	23.89	9.92	clear
0600	61	281.30	732600	0	7.90	1209	23.27	8.93	clear
0620	61	281.65	734000	0	7.90	1241	23.79	12.3	clear
0655	61	282.30	736000	0	7.89	1218	24.03	8.47	CLEAR
0705			pump	off					
0803		239.70	736889						
0804				pump on					pump @ ~900'
0807		266.28		0	7.87	1235	24.46	316	cloudy
									Flow meter not working
0825									Flow meter working.
0827	60	272.48	737270	0	7.90	1251	22.93	28.1	clear
0845	60	273.96	738331	0	7.87	1232	24.66	16.4	clear
0901	60	274.89	739276	0	7.85	1234	24.64	13.4	clear
0923	60	275.72	740609	0	7.85	1233	24.61	11.5	clear
0938	60	276.19	741507	0	7.86	1228	24.62	16.4	clear
1000	60	276.71	742766	0	7.85	1227	24.69	14.4	clear
1015	60	277.01	743708	0	7.84	1227	24.76	12.7	clear

Pump @ 1166'

Comments:

DEVELOPMENT
FIELD DATA LOG

Project Name: FCI PTF	Project No.: 129687
Well No.: O-Ø2	Date: 3-23-18
Location: Florence, AZ	Measuring Point: TOC
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 500-1200
Pump Type/Setting (ft bls): Grundfos/ Various	Activity: Pump Devel
How Q Measured: Totalizer	H&A Personnel: C Price, S Hensel

Time	Discharge (gpm)	~~Pumping~~ Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °F °C	Comments
								NTU
1042	60	277.50	745281	0	7.85	1228	24.61	9.47 clear
1100	60	277.80	746351	0	7.87	1228	24.86	10.0 clear
1115	60	278.05	747238	0	7.85	1227	24.93	7.73 clear
1119	—	—	747501	—	—	—	—	— pump off
1155	—	—	—	—	—	—	—	— pump on
1157	60	270.18	747650	0	7.83	1227	24.74	11.0 clear
1212	60	275.65	748519	0	7.83	1227	24.84	10.3 clear
1325	60	276.50	752845	0	7.93	1234	24.96	9.71 clear
1446	60	279.90	757678	0	7.79	1232	25.14	7.41 clear
1450	—	—	—	—	—	—	—	— pump off
1515	0	243.90	—	pump	on	—	—	
1520	59	275.70	758000	0	7.83	1239	25.08	10.4 CLEAR
1540	59	282.00	759300	0	7.87	1232	25.08	9.45 CLEAR
1600	59	284.20	760300	0	7.96	1238	24.96	6.34 CLEAR
1605	—	—	—	—	—	—	—	— PUMP OFF
1620	0	250.00	760500	—	—	—	—	PUMP ON
1625	59	281.60	760700	0	7.93	1219	24.25	CLEAR 8.26
1640	59	28465	761000	0	7.93	1231	24.76	9.81
1655	59	285.70	762400	0	7.94	1236	24.82	7.07
1657	—	—	—	—	—	—	—	— PUMP OFF
1715	0	251.7	762600	—	—	—	—	PUMP ON
1718	59	282.80	762880	0	7.85	1224	24.65	7.86 CLEAR
1740	59	288.90	764100	0	7.85	1228	24.77	7.25 CLEAR
1750	59	287.60	764666	0	7.89	1232	24.64	7.35 Clear
1750	—	—	—	pump	off	—	—	—
1900	—	—	—	Pump	on	—	—	—
1905	59	258.65	764800	0	7.88	1235	23.19	451 cloudy
2000	59	281.00	768009	0	7.87	1199	23.87	23.4 clearer

Pump at 59

Comments:

DEVELOPMENT
FIELD DATA LOG

Project Name: FCE PTF	Project No.: 129667-007
Well No.: 0-02	Date: 3/23/18 - 3/24/18
Location: Florence, AZ	Measuring Point: TOC
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 500 - 1200
Pump Type/Setting (ft bls): Grundfos / 599	Activity: Pump Development
How Q Measured: Totalizer	H&A Personnel: G. Hansel

10 PM (restarted)

Time	Discharge (gpm)	Pumping Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Turbidity NTU	Comments
2300	59	282.8	211900	0.0	7.90	1207	24.16	13.0	clear
2200	59	284.0	775600	0.0	7.92	1209	24.10	9.67	clear
2300	59	285.3	779350	0.0	7.92	1213	24.13	7.14	clear
0000	59	286.00	782900	0.0	7.90	1207	23.94	5.97	clear
0001	~~600~~				Pump off				
0016	~~0030~~				Pump on				
0020	63	273.00	783200	0.0	7.87	1103	23.24	24.2	clear
0050	63	285.8	785100	0.0	7.92	1185	22.94	10.6	clear
0120	63	286.3	787100	0.0	7.88	1188	23.47	6.74	clear
0121			787000		Pump off				
0136					Pump on				
0140	70	272.5	787700	0.0	7.87	1098	23.44	21.9	clear
0210	70	282.8	789300	0.0	7.90	1206	23.91	6.25	clear
0215					Pump off				
0230					Pump on				
0235	70	269.0	789500	0.0	7.93	1093	23.45	18.8	clear
0305	70	285.3	791600	0.0	7.84	1199	23.90	9.73	clear
0335	70	286.0	793400	0.0	7.89	1204	23.89	5.57	clear
0340					Pump off				
0355					Pump on				
0400	70	269.0	793500	0.0	7.88	1197	23.71	9.21	clear
0435	70	284.5	795200	0.0	7.91	1201	23.92	5.83	clear
0436					Pump off				
0451					Pump on				
0455	70	269.0	795400	0.0	7.90	1201	23.68	7.14	clear
0525	70	285.8	797900	0.0	7.90	1211	24.08	9.28	clear
0526					Pump off				
0541					Pump on				

Comments:

DEVELOPMENT
FIELD DATA LOG

Project Name: FCS P-8	Project No.: 129687-007
Well No.: O-02	Date: 3/22/18
Location: Florence, AZ	Measuring Point: TOC
Total Depth of Well (ft bls): 1200	Screen Interval (ft bls): 500-1200
Pump Type/Setting (ft bls): Grundfos / 599	Activity: Pump Development
How Q Measured: Totalizer	H&A Personnel: S Hensel

Totalizer

Time	Discharge (gpm)	~~Pumping~~ Water Level (ft)	Specific Capacity (gpm/ft)	Sand Content (ppm)	pH	Sp. Cond. (µmhos/cm)	Temp. °C	Turbidity NTU	Comments
0545	70	266	798100	0.0	7.85	1179	23.46	8.72	clear
0638	70	284	801468	0	7.93	1226	23.98	7.39	clear
0705	70	285.9	803100	0.0	7.76	1581	24.32	5.02	Clear
0708									pump off

Calibrated YSI

Comments:

APPENDIX I

Well Video Log and Gyroscopic Survey Reports

Southwest Exploration Services, LLC

borehole geophysics & video services

Southwest Exploration Services, LLC

25811 S. Arizona Avenue Chandler, AZ. 85248

Phone: (480) 926-4558 Fax: (480) 926-4579 Web: www.swexp.com

Client: Florence Copper | Survey Date: March 30, 2018

Address: 1575 West Hunt Hwy | Invoice: | Run: 1

City: Florence | State: AZ | Zip: 85132 | **Well Name:** 0-02

Requested By: H&A | P.O.: | **Well Owner:** Florence Copper

Copy To: | Camera: CCV S.S. Color Camera - Long L.H.

Purpose: General Inspection | Zero Datum: Top of Casing

Location: | Depth: | Vehicle: 310

Field: Florence Copper | Type Perfs: Horizontal Slots

1st Csg.O.D. 5 In. | Csg Weight: | From: 0 ft. | To: 1173 ft. | 2nd Csg.O.D. | Csg Weight: | From: | To:

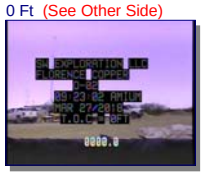
Standing Water Level: 230.2 ft. | Pumping Water Level: | Pump Depth: | O.D.Ref.: Measured | Casing Buildup: None

Operator: D. Beam | Lat.: | Long.: | Sec: | Twp: | Rge:

Other Information:

Wellbore Snapshots

0 Ft (See Other Side)

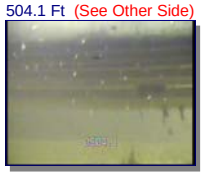


99 Ft (See Other Side)

229.3 Ft (See Other Side)

230.2 Ft (See Other Side)

504.1 Ft (See Other Side)



504.9 Ft (See Other Side)

613.7 Ft (See Other Side)

736.5 Ft (See Other Side)

1173.7 Ft (See Other Side)

True Depths: (SideScan-Feet)	WELLBORE / CASING INFORMATION
0.	Survey started at the top of the case.
99.	Joint above water line observed.
229.3	Water appears to be milky.
230.2	Static water level observed.
504.1	Transistion to perforations observed.
504.9	First perforations observed.
613.7	Down view is obscured.
736.5	Down view still obscured.
1,173.7	Bottom of the well observed.

Notes:

Page Number: 1

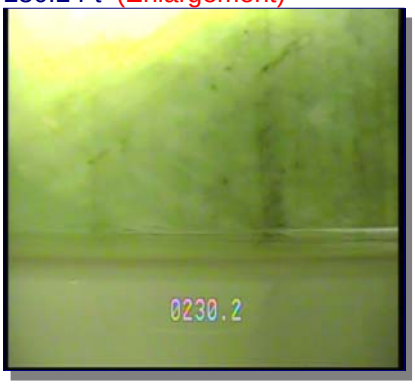
9 WELLBORE SHAPSHOTS

0 Ft (Enlargement)

99 Ft (Enlargement)

229.3 Ft (Enlargement)

230.2 Ft (Enlargement)



504.1 Ft (Enlargement)

504.9 Ft (Enlargement)

613.7 Ft (Enlargement)

736.5 Ft (Enlargement)

1173.7 Ft (Enlargement)

Drift Report

Wellbore DRIFT Interpretation

PREPARED ESPECIALLY FOR

Florence Copper and Florence Copper

O-02

Tuesday - March 27, 2018

Southwest Exploration Services, LLC
borehole geophysics & video services

Southwest Exploration Services, LLC
(480) 926-4558

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC

(480) 926-4558

Company: Florence Copper **Well Owner:** Florence Copper

County: Pinal **State:** Arizona **Country:** United States

Well Number: O-02 **Survey Date:** Tuesday - March 27, 2018 **Magnetic Declination:** Declination Correction Not Used

Field: Florence Copper Project **Drift Calculation Methodology:** Balanced Tangential Method

Location:

Remarks:

Witness: H&A **Vehicle No.:** 500 **Invoice No.:** **Operator:** E. BEAM **Well Depth:** 1220 Feet **Casing size:** 5 Inches

Tool: Gyro - 1422 **Lat.:** **Long.:** **Sec.:** **Twp.:** **Rge.:**

MEASURED DATA			DATA COMPUTATIONS						
DEPTHS, feet	INCLINATIONS, degrees	AZIMUTHS, degrees	TVD, feet	T. LATITUDE, feet	T. LONGITUDE, feet	DOGLEG SEV., degrees per 20 Feet	DOGLEG SEV., degrees per 100 feet	DRIFT DIST., feet	DRIFT BGR., degrees
0	0.59	282.55	0.00						
20	0.38	294.84	19.99	0.050	-0.161	1.00	0.94	0.17' (2.04")	287.40
40	0.40	253.75	39.98	0.058	-0.288	0.41	3.09	0.29' (3.48")	281.40
60	0.33	004.94	59.97	0.096	-0.350	0.96	7.26	0.36' (4.32")	285.30
80	0.34	350.02	79.96	0.212	-0.355	0.84	1.14	0.41' (4.92")	300.80
100	0.35	249.87	99.96	0.249	-0.423	0.42	6.74	0.49' (5.88")	300.50
120	0.09	035.52	119.95	0.241	-0.471	0.13	8.40	0.53' (6.36")	297.10
140	0.14	061.66	139.94	0.265	-0.440	0.43	1.99	0.51' (6.12")	301.10
160	0.20	147.28	159.93	0.247	-0.400	0.83	5.98	0.47' (5.64")	301.70
180	0.19	052.00	179.92	0.238	-0.355	0.95	6.50	0.43' (5.16")	303.80
200	0.13	181.20	199.91	0.236	-0.329	0.37	7.94	0.41' (4.92")	305.60
220	0.11	181.12	219.90	0.194	-0.330	1.00	0.01	0.38' (4.56")	300.50
240	0.22	336.87	239.89	0.210	-0.345	1.00	8.60	0.40' (4.80")	301.30
260	0.23	324.61	259.88	0.278	-0.383	0.34	0.94	0.47' (5.64")	306.00
280	0.28	012.11	279.87	0.359	-0.396	0.93	3.54	0.53' (6.36")	312.20
300	0.16	340.88	299.86	0.433	-0.395	0.78	2.37	0.59' (7.08")	317.60
320	0.13	359.29	319.85	0.482	-0.404	0.53	1.41	0.63' (7.56")	320.00
340	0.13	256.86	339.84	0.500	-0.426	0.00	6.86	0.66' (7.92")	319.50

True Vertical Depth: 1200.06' **Final Drift Distance:** 1.27' (15.24") **Final Drift Bearing:** 278.80°

Note: Magnetic Declination is not used because it is not a factor in the calculation of well drift or alignment. Magnetic Declination is only important if attempting to hit a target or miss another well and then it is included in the calculations.

WELLBORE DRIFT INTERPRETATION

Southwest Exploration Services, LLC

O-02

(480) 926-4558

MEASURED DATA			DATA COMPUTATIONS						
DEPTHS, feet	INCLINATIONS, degrees	AZIMUTHS, degrees	TVD, feet	T. LATITUDE, feet	T. LONGITUDE, feet	DOGLEG SEV., degrees per 20 Feet	DOGLEG SEV., degrees per 100 feet	DRIFT DIST., feet	DRIFT BRG., degrees
360	0.09°	345.05°	359.83	0.510	-0.452	0.56	6.12	0.68' (8.16")	318.40
380	0.07°	240.48°	379.82	0.519	-0.467	0.73	6.96	0.70' (8.40")	318.00
400	0.17°	349.08°	399.81	0.542	-0.483	0.88	7.14	0.73' (8.76")	318.30
420	0.25°	102.83°	419.80	0.561	-0.446	0.20	7.37	0.72' (8.64")	321.50
440	0.11°	328.43°	439.79	0.568	-0.414	0.97	8.11	0.70' (8.40")	323.90
460	0.13°	029.55°	459.78	0.604	-0.413	0.96	4.47	0.73' (8.76")	325.70
480	0.19°	045.47°	479.77	0.647	-0.378	0.12	1.22	0.75' (9.00")	329.70
500	0.22°	189.22°	499.76	0.632	-0.361	0.81	8.36	0.73' (8.76")	330.30
520	0.23°	093.45°	519.75	0.592	-0.327	0.59	6.52	0.68' (8.16")	331.10
540	0.19°	046.60°	539.74	0.612	-0.263	0.73	3.50	0.67' (8.04")	336.80
560	0.20°	351.54°	559.73	0.669	-0.244	0.28	4.06	0.71' (8.52")	340.00
580	0.14°	053.83°	579.72	0.718	-0.229	0.77	4.55	0.75' (9.00")	342.30
600	0.33°	055.30°	599.71	0.765	-0.162	0.49	0.11	0.78' (9.36")	348.10
620	0.13°	009.73°	619.70	0.820	-0.111	0.69	3.41	0.83' (9.96")	352.30
640	0.10°	043.78°	639.69	0.855	-0.095	0.13	2.57	0.86' (10.32")	353.70
660	0.16°	023.82°	659.68	0.893	-0.072	0.83	1.52	0.90' (10.80")	355.40
680	0.05°	111.99°	679.67	0.915	-0.053	0.80	6.12	0.92' (11.04")	356.70
700	0.07°	091.21°	699.66	0.911	-0.033	0.25	1.59	0.91' (10.92")	357.90
720	0.15°	181.68°	719.65	0.885	-0.022	0.54	6.24	0.88' (10.56")	358.60
740	0.08°	328.01°	739.64	0.871	-0.030	0.24	8.42	0.87' (10.44")	358.00
760	0.13°	039.53°	759.63	0.900	-0.023	0.94	5.14	0.90' (10.80")	358.50
780	0.29°	165.81°	779.62	0.868	0.004	0.65	7.85	0.87' (10.44")	000.30
800	0.20°	126.43°	799.61	0.798	0.044	0.97	2.96	0.80' (9.60")	003.20
820	0.44°	209.68°	819.60	0.711	0.034	0.06	5.84	0.71' (8.52")	002.70
840	0.37°	223.83°	839.59	0.598	-0.049	0.29	1.08	0.60' (7.20")	355.30
860	0.32°	213.57°	859.58	0.505	-0.125	0.57	0.79	0.52' (6.24")	346.10
880	0.25°	185.85°	879.57	0.415	-0.160	0.47	2.11	0.44' (5.28")	338.90
900	0.23°	038.74°	899.56	0.403	-0.139	0.42	8.44	0.43' (5.16")	340.90
920	0.22°	284.64°	919.55	0.444	-0.151	0.69	7.38	0.47' (5.64")	341.20
940	0.20°	009.22°	939.54	0.488	-0.183	0.04	5.92	0.52' (6.24")	339.50
960	0.22°	084.95°	959.53	0.526	-0.139	0.30	5.40	0.54' (6.48")	345.20
980	0.19°	298.43°	979.52	0.545	-0.130	0.98	8.42	0.56' (6.72")	346.60
1,000	0.38°	260.86°	999.52	0.550	-0.225	0.95	2.83	0.59' (7.08")	337.80

True Vertical Depth: 1200.06' **Final Drift Distance: 1.27' (15.24")** **Final Drift Bearing: 278.80°**

WELLBORE DRIFT INTERPRETATION

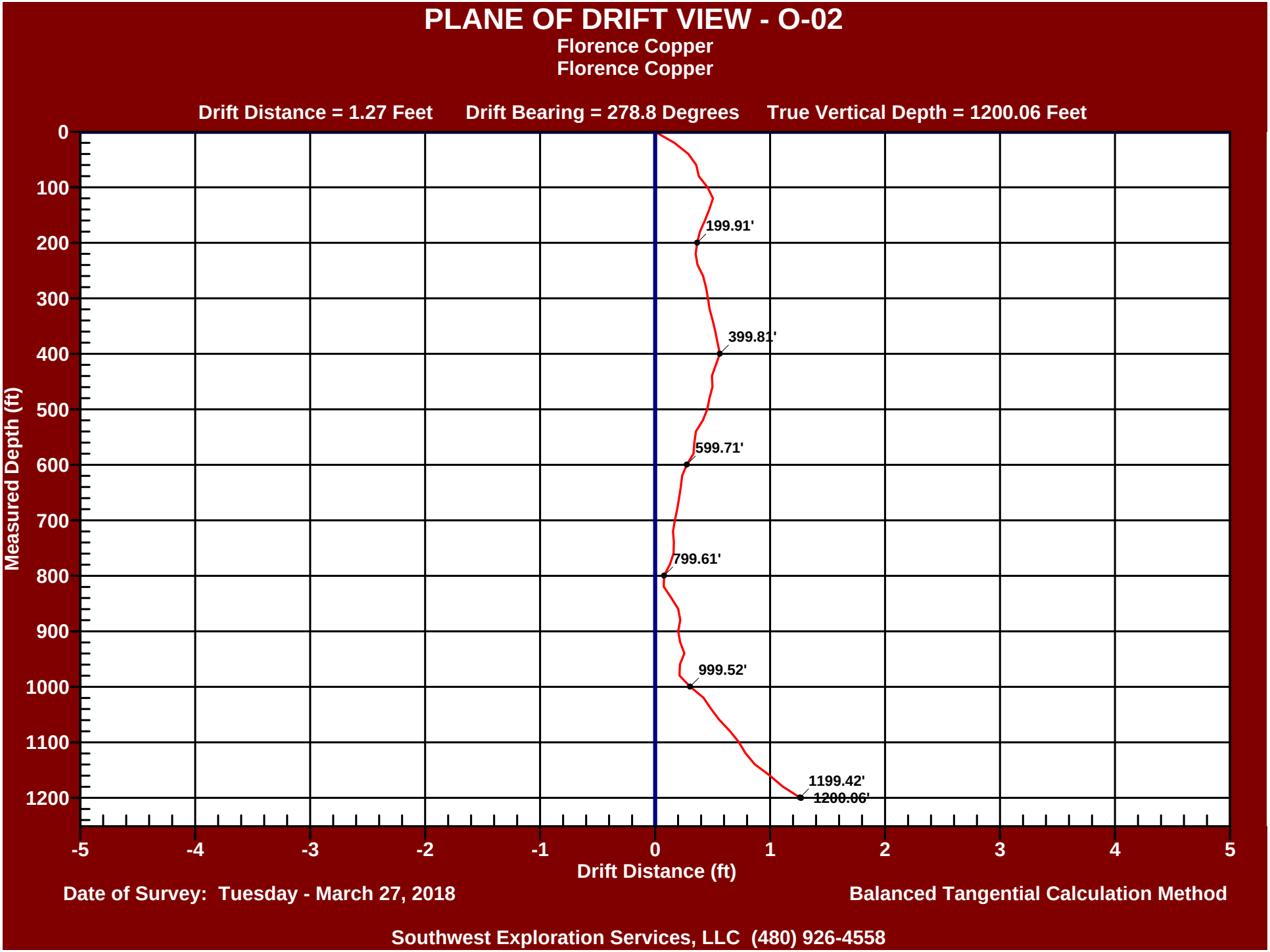
Southwest Exploration Services, LLC

O-02

(480) 926-4558

MEASURED DATA			DATA COMPUTATIONS						
DEPTHS, feet	INCLINATIONS, degrees	AZIMUTHS, degrees	TVD, feet	T. LATITUDE, feet	T. LONGITUDE, feet	DOGLEG SEV., degrees per 20 Feet	DOGLEG SEV., degrees per 100 feet	DRIFT DIST., feet	DRIFT BRG., degrees
1,020	0.32°	262.27°	1,019.51	0.532	-0.346	0.96	0.11	0.63' (7.56")	327.00
1,040	0.41°	198.63°	1,039.50	0.457	-0.424	0.46	4.64	0.62' (7.44")	317.10
1,060	0.33°	275.21°	1,059.49	0.394	-0.504	0.25	5.45	0.64' (7.68")	308.00
1,080	0.23°	240.55°	1,079.48	0.379	-0.596	0.92	2.62	0.71' (8.52")	302.50
1,100	0.29°	302.91°	1,099.47	0.387	-0.673	0.09	4.55	0.78' (9.36")	299.90
1,120	0.08°	257.22°	1,119.46	0.411	-0.729	0.16	3.41	0.84' (10.08")	299.40
1,140	0.39°	295.22°	1,139.45	0.437	-0.804	0.98	2.86	0.92' (11.04")	298.50
1,160	0.55°	237.96°	1,159.44	0.415	-0.947	0.54	4.21	1.03' (12.36")	293.70
1,180	0.36°	228.24°	1,179.43	0.322	-1.075	0.80	0.75	1.12' (13.44")	286.70
1,200	0.85°	235.77°	1,199.42	0.197	-1.245	0.66	0.58	1.26' (15.12")	279.00
1,201	0.91°	266.75°	1,200.06	0.194	-1.254	0.44	72.27	1.27' (15.24")	278.80

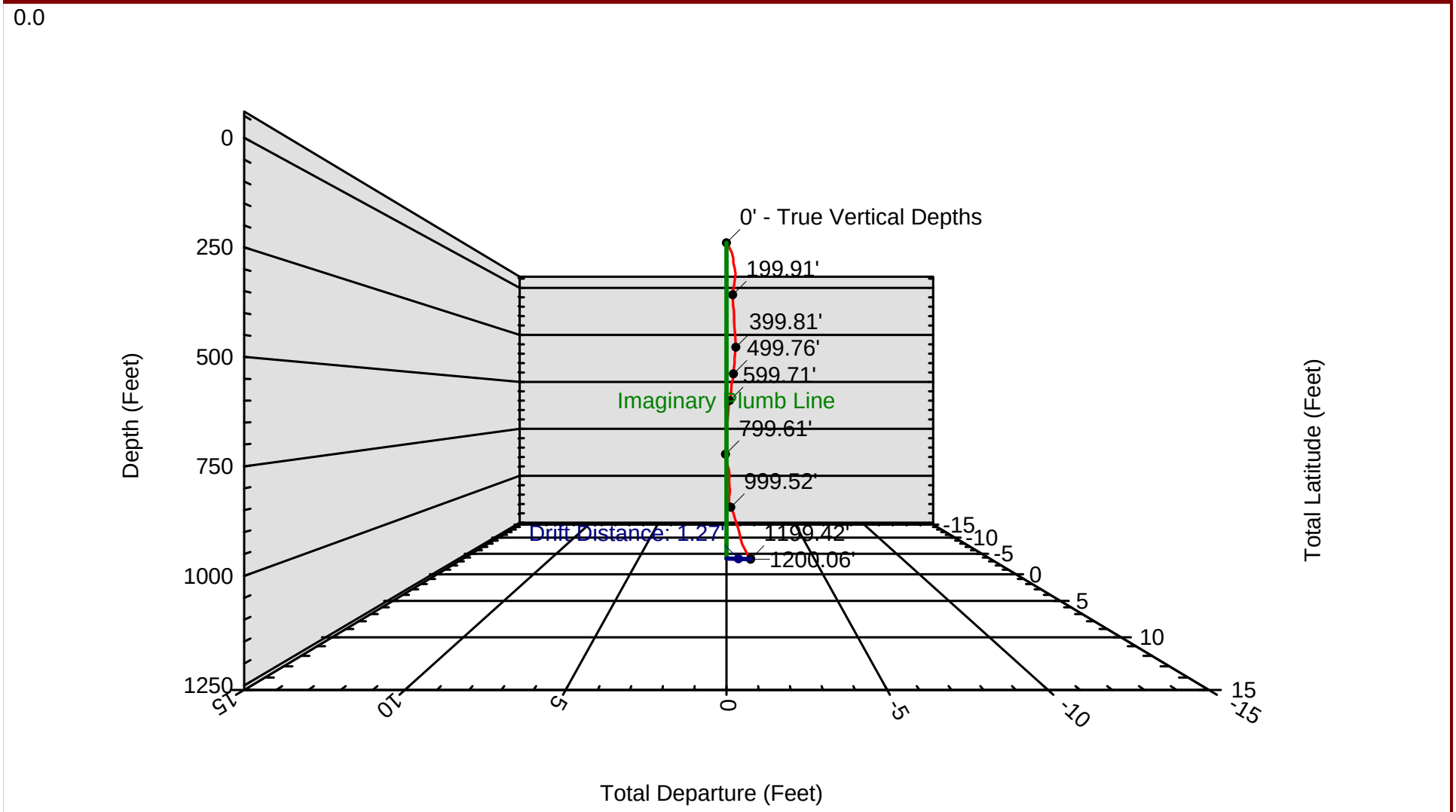
True Vertical Depth: 1200.06' **Final Drift Distance: 1.27' (15.24")** **Final Drift Bearing: 278.80°**


PLANE OF DRIFT VIEW - O-02
Florence Copper
Florence Copper
Drift Distance = 1.27 Feet
Drift Bearing = 278.8 Degrees
True Vertical Depth = 1200.06 Feet
Measured Depth (ft)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
199.91'
399.81'
599.71'
799.61'
999.52'
1199.42'
1200.06'
-5
-4
-3
-2
-1
0
1
2
3
4
5
Drift Distance (ft)
Date of Survey: Tuesday - March 27, 2018
Balanced Tangential Calculation Method
Southwest Exploration Services, LLC (480) 926-4558

3D PROJECTION VIEW - O-02

Florence Copper
Florence Copper

Drift Distance = 1.27 Feet **Drift Bearing = 278.8 Degrees** **True Vertical Depth = 1200.06 Feet**



Date of Survey: Tuesday - March 27, 2018 **Balanced Tangential Calculation Method**

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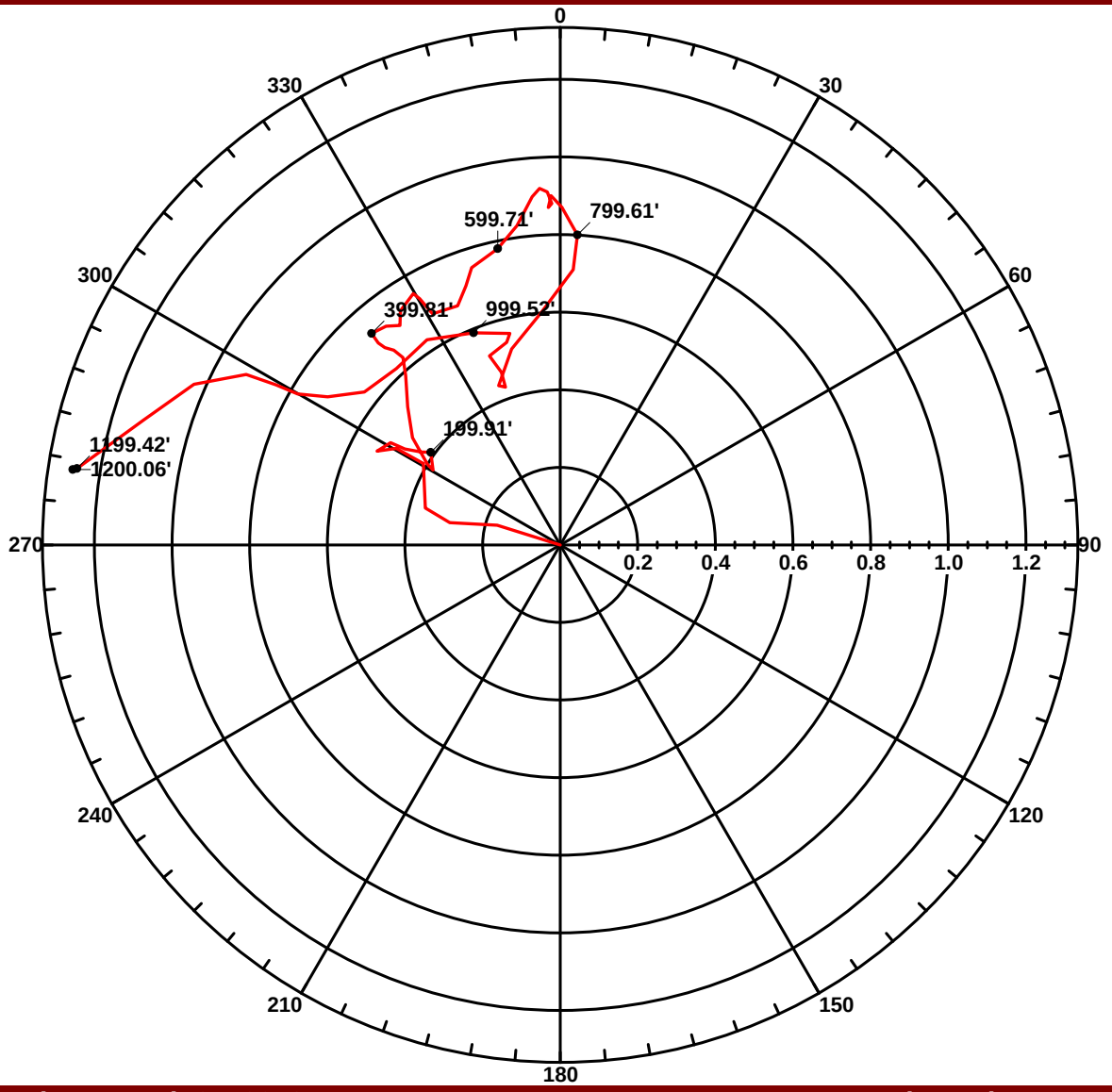
POLAR VIEW - O-02

Florence Copper
Florence Copper

Drift Distance = 1.27 Feet Drift Bearing = 278.8 Degrees True Vertical Depth = 1200.06 Feet



Date of Survey: Tuesday - March 27, 2018 **Balanced Tangential Calculation Method**

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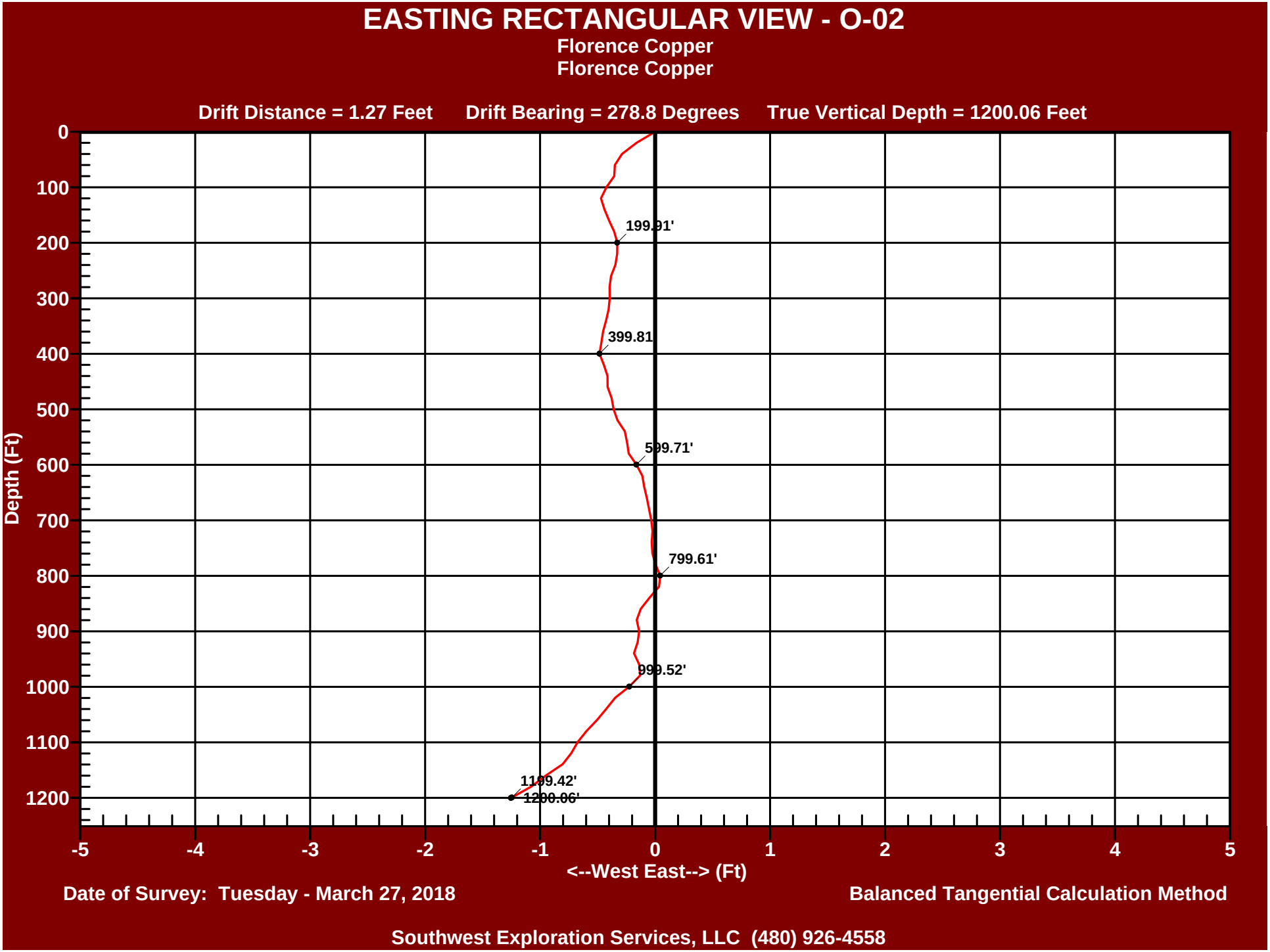
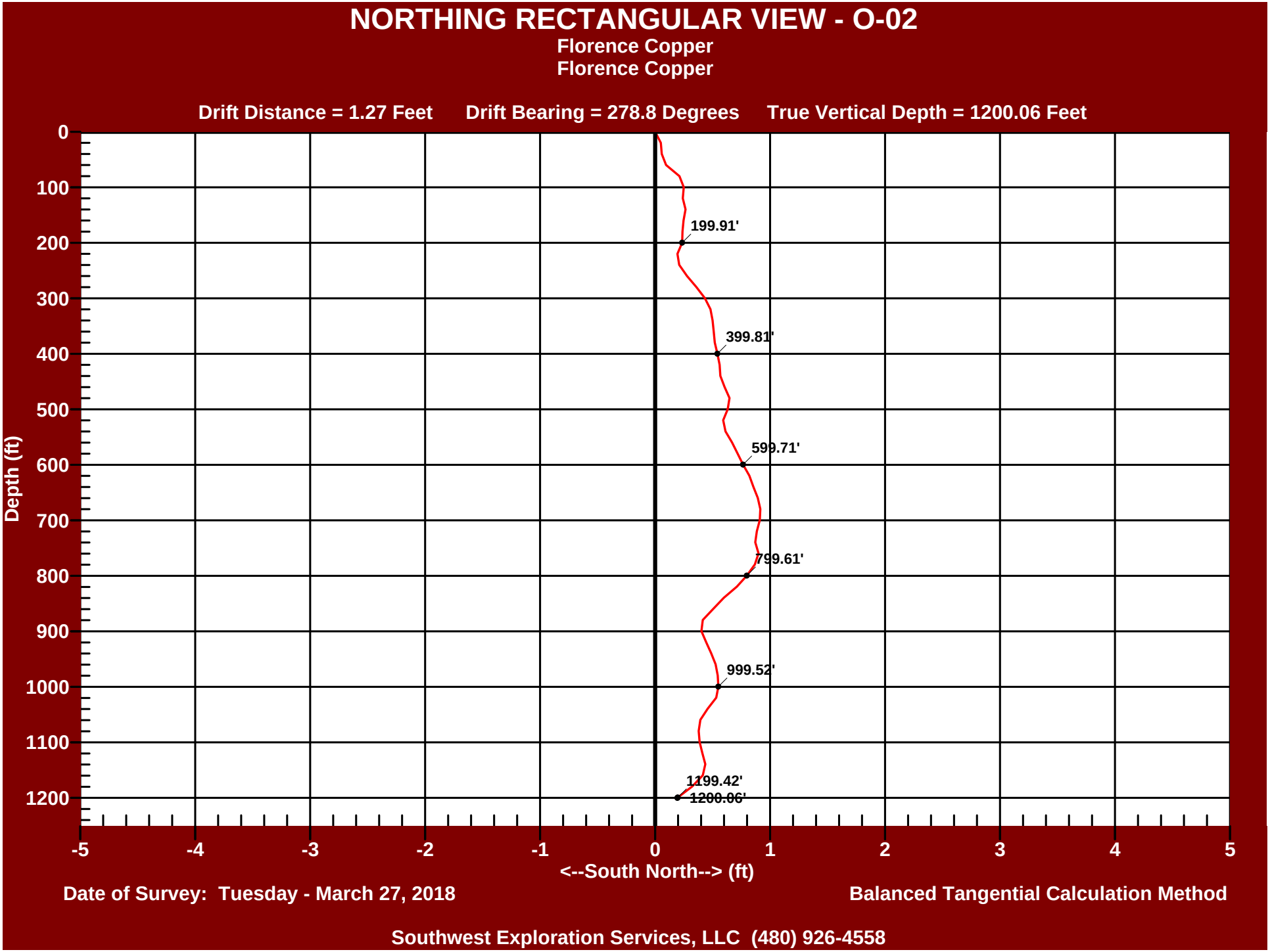

EASTING RECTANGULAR VIEW - O-02
Florence Copper
Florence Copper
Drift Distance = 1.27 Feet
Drift Bearing = 278.8 Degrees
True Vertical Depth = 1200.06 Feet
Depth (Ft)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
199.91'
399.81
599.71'
799.61'
999.52'
1199.42'
1200.06'
-5
-4
-3
-2
-1
0
1
2
3
4
5
<--West East--> (Ft)
Date of Survey: Tuesday - March 27, 2018
Balanced Tangential Calculation Method
Southwest Exploration Services, LLC (480) 926-4558


NORTHING RECTANGULAR VIEW - O-02
Florence Copper
Florence Copper
Drift Distance = 1.27 Feet
Drift Bearing = 278.8 Degrees
True Vertical Depth = 1200.06 Feet
Depth (ft)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
199.91'
399.81'
599.71'
799.61'
999.52'
1199.42'
1200.06'
-5
-4
-3
-2
-1
0
1
2
3
4
5
<--South North--> (ft)
Date of Survey: Tuesday - March 27, 2018
Balanced Tangential Calculation Method
Southwest Exploration Services, LLC (480) 926-4558